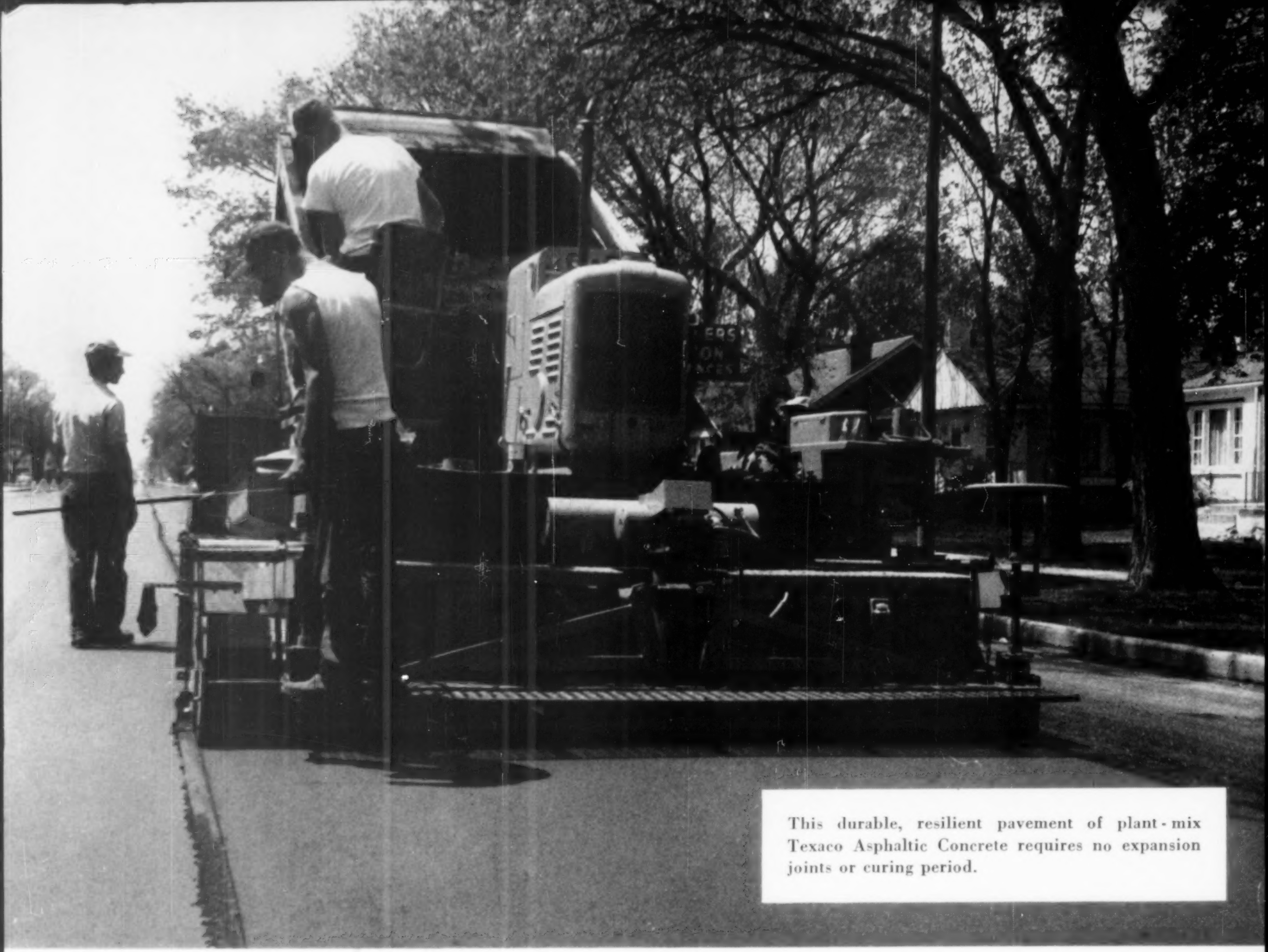
MAY 1960

The American City

Miami's newest water softening plant will be a focal point of interest when the nation's municipal waterworks officials and engineers meet this month at nearby Bal Harbour for the annual American Water Works Association Conference. Shown above are AWWA's vice president, C. F. Wertz; president: Lauren W. Grayson; and secretary, Raymond J. Faust. See page 3.



This durable, resilient pavement of plant-mix Texaco Asphaltic Concrete requires no expansion joints or curing period.

Why it pays to pave with asphalt

From New York City and Philadelphia down to communities of a few thousand population, the pavement most frequently constructed on city streets is Asphalt. Here, briefly, are some of the reasons for this preference.

Durability—Asphalt absorbs the impact of the heaviest industrial traffic year after year with a minimum of upkeep. This is being demonstrated under the 127,000 vehicle a day traffic of the New Jersey Turnpike.

Cost—When competitive bids have been received on Asphalt and other paving of comparable design, Asphalt has cost substantially less.

Riding quality—Because Asphalt is resilient and requires no expansion joints, it is unequalled for driving ease and comfort.

Speed of construction—Asphalt is speedily laid by modern paving machines and it requires no curing period. Motorists, as well as residents and business along the street, are subjected to a minimum of delay and inconvenience.

If you would like assistance with a paving problem, our 55 years of Asphalt experience is at your service. Write to the nearest of our offices listed below.

Helpful Asphalt Brochure

We shall be glad to send interested city officials two illustrated brochures which describe methods and materials recommended for heavy-duty, intermediate and low-cost types of Asphalt construction for streets, airports and parking areas.

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TEXACO ASPHALT

The American City
A Buttenheim Publication
MAY 1960
MAGAZINE OF MUNICIPAL MANAGEMENT AND ENGINEERING

ADMINISTRATION AND GOVERNMENT

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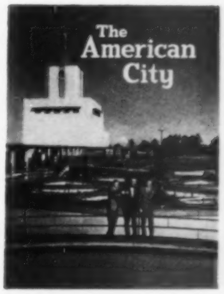

Cover Picture

The Miami, Fla., water system is nationally known for its resourceful use of well fields, for its softening facilities that reclaim the lime sludge for re-use, and for its area-wide service in a metropolitan complex. This makes the Miami area an appropriate spot for the American Water Works Association to hold its annual conference.

A story on lime reclamation in Miami by AWWA's vice president, C. F. Wertz, manager of the Miami water system which serves Bal Harbour, the actual site of the conference, appears on page 93.

Is your city profiting from these modern outdoor telephones?

Left: Airlight Booth
Below: Drive-Up Phone
Lower Right: Walk-Up Phone

PHONE
FROM
CAR

MODERN OUTDOOR TELEPHONES PROVIDE SERVICE TO YOUR CITIZENS, REVENUE TO YOUR CITY

Outdoor phones on city sidewalks, parks and other public property are more than a convenience. Ready for use night and day, they supplement Police and Fire Alarm Systems—provide a sense of security for local residents and travelers alike. And rather than adding to tax burdens, this service returns substantial and continuing revenue to your city.

Each year, the value of outdoor telephone service for both routine and emergency calls has been growing more evident. Many cities already have well-planned programs to install outdoor phones on public property.

To make these programs more effective, new equipment has been developed. It includes the modern Airlight Booth, the new Walk-Up Phone, and the handy Drive-Up Phone for motorists. Good planning and placement make these public phones as convenient as the corner mailbox.

Your local Bell Telephone company will be glad to custom design a plan for your city and discuss it with you. Call your Bell Telephone manager.

BELL TELEPHONE SYSTEM

Volume 75 Number 5

The
American City

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LETTERS TO THE EDITOR

The First Council-Manager City

I have read with a great deal of interest Professor Mason's article "Opposition to Council-Manager Government" which appeared in the March issue (p. 177). It has one error which I would like to correct.

The first community to adopt the council-manager plan was Sumter, S. C., in 1912. Staunton, Va., was the first city to have a manager, but the city did not adopt the plan until after Sumter. This has been documented by the International City Managers' Association in its pamphlet, "Questions and Answers About the Council-Manager Plan."

Wade S. Kolb
City Manager
Sumter, S. C.

Editor's Note: Staunton's pioneering use of the "general manager," 1908-11, without formal adoption of a council-manager plan, paved the way for Sumter, and later, Dayton, O. The plan they adopted, now in use in some 1,600 cities, has not been altered greatly since then.

Traffic Circle For Small City

In the April issue of The American City, we read with interest the article on circumferential highways entitled, "Traffic Circle Around a Small City" (p. 151).

As planners, we have for some time subscribed, in theory, to what has become an actuality in this small Alabama community. We think this article will be of interest to our advisory Planning Commission and other interested city officials, as Syracuse will not only have a circumferential highway around its central business district, but around the city as well.

Sanford Getreu
Deputy Planning Commissioner
Syracuse, N. Y.

Federal Department Of "Urbiculture"

I was greatly impressed by your editorial in the March issue. It makes a very important point ("A Department of 'Urbiculture' Is Not Enough," p. 7).

It is absolutely true that a Department of Urban Affairs or Urbiculture in the federal government would not by itself solve the problems of urban areas. As you so correctly point out this action would do nothing to correct the problems of dealing with urban affairs on the state level. Your point about improving the representation of urban areas in state legislatures is also well taken. One could make a good case for departments of urban affairs in each of the state governments as well. In fact a proposal for just this was made a couple of years ago by Mark E. Keane, the city manager of Oak Park, Ill. He made the proposal at a discussion of federal urban affairs at the ASPO Conference in 1958.

Douglas S. Powell
Planning Director
Regional Plan Assn.
New York, N. Y.

"Democracy's Kitchen"

The March issue of The American City and in particular your editorial certainly reaffirm our previously expressed faith in your publication ("A 'Department of Urbiculture' Is Not Enough," p. 7).

I could not help noting the reference to Congressman Jim Wright's phrase, "Democracy's Kitchen." Jim is the former Mayor of Weatherford, past president of the Texas Municipal League, and certainly an individual with a great understanding of local government affairs and problems. He is an energetic young man. We certainly advise you to keep your eye on him.

Steve Matthews
Executive Director
Texas Municipal League
Austin, Texas

Editor's Note: We're grateful to Steve Matthews for identifying Congressman Wright. Just as a true gourmet judges a restaurant by the quality of its kitchen, a believer in democracy as our basic national philosophy will measure its effectiveness by the vitality of "demcracy's kitchen," our local governments.

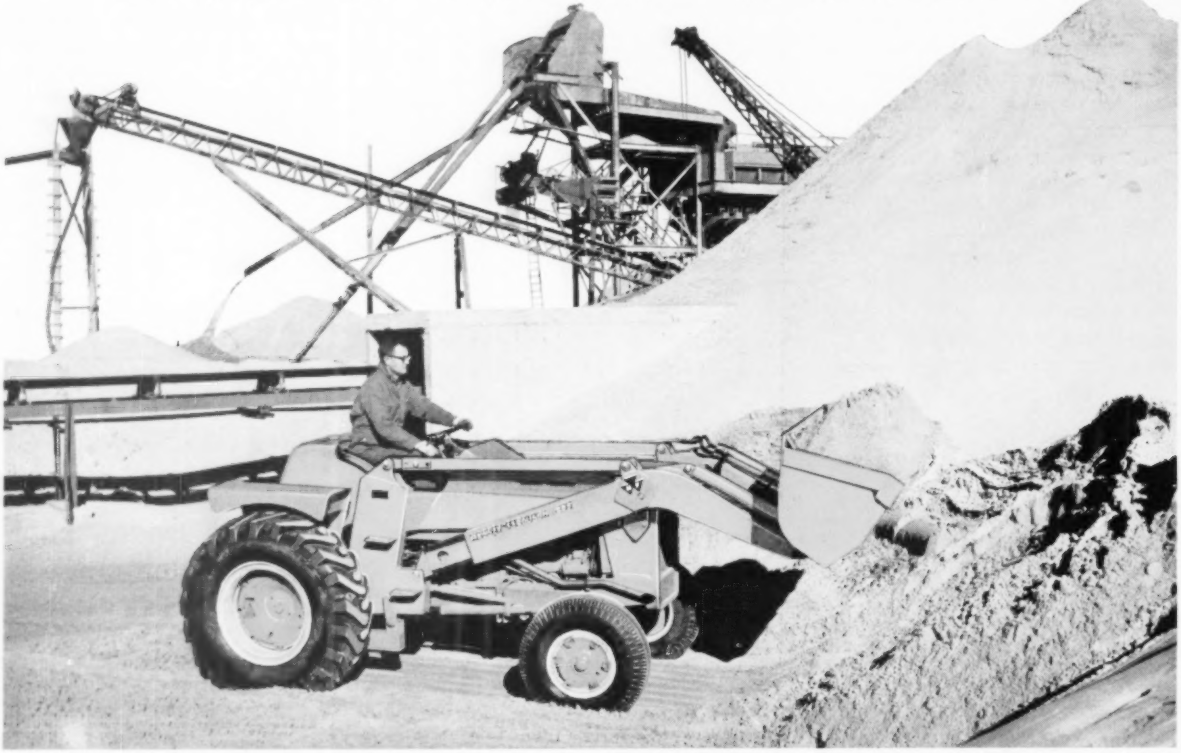
Bright Future for Street Lighting

Your articles on good practice in street lighting meet a great need ("Outdoor Lighting," in each issue). By now, the record has been well documented that intelligently designed outdoor lighting probably does as much to reduce crime, check juvenile delinquency, and stimulate business within a city as any other single measure.

In the next ten years, electric utilities forecast their expenditures for street lighting equipment will

(Continued on page 18)

HERE'S REAL
"CAN DO" PERFORMANCE
BACKED BY "HAVE DONE" EXPERIENCE!



the MASSEY-FERGUSON 406

featuring INSTANT REVERSE

In loading and stockpiling operations you want a machine that
— is fast
— gets full loads
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— can be used for a multitude of jobs
— permits excellent visibility
— is reasonable in cost.

To all these requirements, the Massey-Ferguson 406 says "Can Do."

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The operator's control zone is centrally located to permit unequalled visibility to the front, rear, and both sides.

The 406 is versatile. It handles big jobs with speed, but also completes the small jobs economically. A full range of matched attachments are available.

Compare it for performance, cost, and versatility against anything in its class. You'll see why it says "Can Do." Ask your Massey-Ferguson Industrial Dealer to show you his complete line of M-F Industrial equipment now.

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MF60-23

Make Your Water Works More Than a Utility

When the water-works men of the nation meet this month at their annual American Water Works Association conference, we hope that they reserve time to review those water-supply structures that are civic interest-winners, instead of mere municipal workhorses. There are a number of them. The example they set needs following.

Take the subject of water towers. Today, we see an unfortunate growing trend to avoid the use of these utilitarian structures, particularly in metropolitan areas. But this is not true everywhere. Many municipalities are proud of their water towers as symbols of civic progress.

Chicago, for example, has a water tower that is one of its most cherished landmarks. It isn't used for water storage any more, but it still stands in the downtown area, and when someone suggests that it be moved, or torn down, Chicagoans rise up in protest.

In that same state is the little village of Western Springs where one finds another water tower that has been a symbol of civic alertness since 1893. It is more than a water tower; until only a few years ago, it also was the Village Hall and today it still houses the police magistrate's court. Each Yuletide it is decked with Christmas lights. You will note a little story about it on page 30 of this issue.

However, these don't begin to match the spectacular drama of the water tower in Caen, France (see p. 169) . Here we have a water tower built to exciting architectural lines, one that doubles as a shopping center as well as a point of civic interest. This is indeed a structure that should challenge water-works men and other municipal administrators across the nation.

Why, for example, should a water tower be built only for the utilitarian purpose of storing water? Rather, let it be fitted to the master plan for a municipality. Let it become a point of interest, with a walkway to the top where people can view their community from its most advantageous point.

Why should a pumping station simply be a prim little building surrounded by a woven wire fence? Let it, instead, provide the means of establishing a neighborhood park so badly needed everywhere.

Why should a water filter be merely a quiet, unobtrusive structure? If its architectural lines are unimpressive, then turn it into a garden spot. One of the most popular and charming water works in the midwest, and possibly the nation, is located in Des Moines, where the spring blossoming of tulips and other flowers in a gracefully landscaped setting brings multitudes of visitors and demonstrates to the people of this city that their water works is something more than water flowing out of a tap.

Today, the American Water Works Association is anxious that the people of this urban nation of ours should not take this vital service for granted. The people do not in Chicago, where they cherish their historic water tower, and at the same time have one of the finest groups of water-works engineers and technicians in the world. They do not in Akron where imaginative planning by Wendell LaDue, whose skill as water-works engineer and administrator is world renowned, provides boating, fishing and other recreational facilities at the city's impounding reservoirs. They do not in Springfield, Ill., where man-made Lake Springfield, serving as the city's water supply, enhances the beauty of the area.

They will not take water for granted elsewhere if administrators, engineers and designers responsible for this vital service adopt dynamic policies such as these.

This man

KOPPERS
BITUMASTIC® 11S
INHIBITIVE PRIMER
STOPS UNDERCUTTING

is stopping a robbery-

...With Koppers New Inhibitive Primer

The robbery he's stopping is *undercutting* for which American industry pays millions in recoating and maintenance costs each year. He's stopping this robbery with Koppers' *new* Bitumastic 11S inhibitive primer, the primer that *ends* undercutting problems.

Bitumastic 11S forms a tight, tough bond with the surface to be protected, preventing the spread of corrosion in the event of damage to the exterior protective coating system. Designed for application in severely contaminated industrial and marine atmospheres, this new inhibitive primer also protects cleaned surfaces from "fall-out" before final coatings are applied. Bitumastic 11S solves another difficult coating problem, by thoroughly protecting structural edges and corners where top coatings are extremely vulnerable to damage. A solvent-type primer, Bitumastic 11S is simply applied by brush, and is compatible with almost all types of top coatings.

Two other New Coatings from Koppers Research

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BITUPLASTIC No. 33
PROTECTION

Bituplastic No. 33, a new coal tar polymer emulsion coating, is exceptionally resistant to water absorption and offers good adhesion to most substrates. Ideally suited for extreme exposures to heavy industrial atmosphere, Bituplastic No. 33 will not flow or sag at temperatures up to 400 degrees F. This new product gives excellent protection to structural steels, concrete, and other materials subject to attack by corrosive salts and chemical environments. It is applied easily by brush, roller or spray.

KOPPERS
BITUPLASTIC No. 44
PROTECTION

Bituplastic No. 44, a mastic coating of troweling consistency, serves as an excellent adhesive and is ideally suited for such uses as adhering cellular glass insulating blocks to the exterior of storage tanks. Bituplastic No. 44 also offers unusual resistance to water absorption, heat and chemical fumes. Another member of the coal tar polymer emulsion coating group, Bituplastic No. 44 is also available on request in a fibrated form, designated as Bituplastic 3S.

Let these New Koppers Coatings work for you

A Koppers specialist will show you how to use these coatings in solving your industrial or marine corrosion problems. From the well-known family of Bitumastic coatings, he'll choose the coating designed for your application. For more information on these new coatings or on our standard coatings, fill out the coupon or write: Koppers Company, Inc., Tar Products Division, Pittsburgh 19, Pa. District Offices: Boston, Chicago, New York, Los Angeles, Pittsburgh and Woodward (Birmingham) Ala. In Canada: Koppers Products, Ltd., Toronto.

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Please send me more information on the Bitumastic Protective Coatings line for corrosion prevention.

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City____________ Zone____ State________

BELZONI, MISSISSIPPI

Sanitary landfill rids city of smoke, odor, insects and rats "as big as rabbits." Reclaims land for future port facilities and park.

CATERPILLAR
No. 955

A sanitary landfill operation eliminates the need for sorting refuse. It costs less than incineration. And best of all, Caterpillar equipment does a double job. For example, it can be used for excavation, fill, snow removal, street repair, etc.

955 Traxcavator disposes of refuse. Also used for loading slag, stockpiling gravel, sewerage construction, and many more jobs.

In 1957 Belzoni (pop. 4600) embarked on a 10-year sanitary landfill program to get a cleaner city and to convert wasted land into useful property. Complaints from residents are a thing of the past. An open dump ½ mile east of town has been replaced with a fill area 1500′ x 600′ along the Yazoo River.

Refuse is dumped, spread, compacted and covered nightly with 6″ of earth. After the accumulation reaches maximum grade, it is covered with 2′ to 3′ of soil. A 955 Traxcavator is the key to the operation's success.

It is a 1½ cu. yd., 70 HP machine designed for rapid cycle time, easy operation and versatility. A fast hydraulic system cuts cycle time and increases maneuverability even in close quarters. Operator visibility is excellent. Tractor controls are conveniently located for handling ease. Bucket controls are at the right arm rest . . . spaced for easy operation with one hand.

The reliable Caterpillar Diesel Engine has a fuel-saving injection system and ability for hard lugging. Lifetime lubricated rollers need no servicing until rebuilding. The exclusive Caterpillar oil clutch provides up to 2000 hours without adjustment. This is equal to about 12 months of adjustment-free operation. With hydraulic track adjusters, an ordinary grease gun is all that's necessary to adjust tracks.

And there's a full line of quick-change attachments for the 955 . . . special buckets, bulldozers, forks, the exclusive side-dump bucket. Wherever you put it, the 955 does the job at top efficiency.

Your local Caterpillar Dealer can give you the complete facts on a sanitary landfill program. He'll point out its many benefits and its economies. He'll recommend the Caterpillar machine to do the job. Get in touch with him. Ask for an on-the-job demonstration.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

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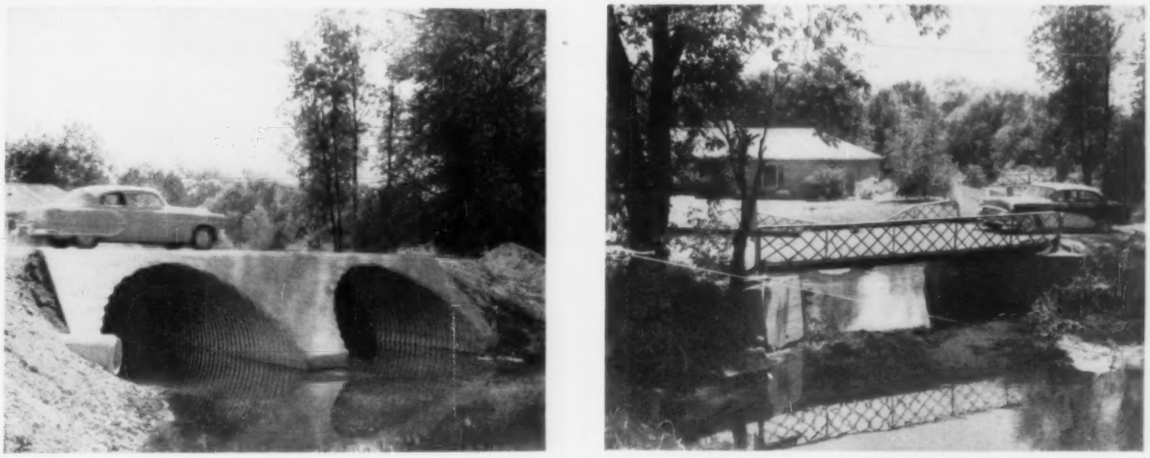
YOUR TAXPAYERS GET THEIR MONEY'S WORTH WITH CAT-BUILT MACHINES



This trim-looking double-barrel pipe-arch structure with sloped and paved ends (l) replaced an old bridge (r) that was much too narrow for present-day traffic. Picture of new bridge was taken before installation of guard rails.

Bridge Replacement Satisfies and Saves

Replacing an old bridge with a pipe-arch structure ended a serious bottleneck and saved Fenton, Mich., some $20,000. Just any old job wouldn't do, for the location was in a fine residential area. Restricted right-of-way added to the problem.

At first we decided that a masonry bridge would solve our problem and we engaged an engineering firm to draw up the necessary plans and specifications. The original estimate was $30,000, but when bids were received, the lowest bid amounted to $45,456, far in excess of available funds.

Although small, several problems added to the cost of a bridge. Many of the homes in the area had foot bridges across the Shiawassee River, giving the appearance of a well-kept estate along a meandering stream. The residents were most insistent that the course of the river not be changed by the new bridge. This meant building it on a skew with sheeting used to cut down the possibility of erosion. In addition, poor foundation conditions at the site required the use of piling to carry the load.

At this point we decided to look at alternate methods and called upon the local Armco sales engineer for suggestions. He recommended using Multi-Plate pipe-arch structures and estimated that the entire cost would be approximately $20,000.

The cost of this solution was attractive but many of the residents felt that this type of structure would not blend in properly with the surrounding landscape. Slight changes and innovations solved this problem.

The final design consisted of twin Multi-Plate pipe arches with spans of 12 feet 4 inches each and a rise of 7 feet 9 inches. The total bottom length is 86 feet. The main barrel of the structure consists of 50 feet of pipe arch on a 45° skew to the centerline of the street. Three 15° elbows were placed in each structure with 8-foot straight sections attached after the elbows to straighten out the flow. A 1:1 bevel plus a slope pavement gave each end a trim appearance, with Michigan State Highway standard bridge railings adding the final touch. This structure permitted full use of the 66-foot right-of-way already owned by the village.

Warren Anderson, a local contractor, handled assembly, placement and all related work connected with the project. The bridge was completed at a total cost of $24,000, substantially less than the low bid for a suitable concrete structure. Of further importance is the satisfaction of the area residents and the elimination of a serious traffic bottleneck.

VIC SMITH
Superintendent of Public Works
Fenton, Mich.

Experience Reduces Cost

In May 1957, THE AMERICAN CITY (page 124) reported how we put an end to street-patching headaches. The backbone of the program was a newly purchased truck-mounted Cmetco Rola Paver made by Creative Metals Corp., Emeryville, Calif.

Today we feel our program is better than ever. Despite salary increases of about 10%, we have reduced the cost of the work almost 25%. On-the-job experience and greater familiarity with the equipment make most of the difference.

During the first few months, our costs ran about 0.0354 cents per square foot to apply a bituminous surface course using material known locally as "Topeka Mix." Now we are doing the same work for 0.0268 cents per square foot, or 24.2% less than at the beginning of the program for a new street surface having an expected minimum life of ten years.

The cost break-down includes one leadman, six street maintenance men, 20% fringe benefits, rental on three trucks, one tandem roller, one spray rig and the Cmetco Rola Paver. The surface applied averages one inch in thickness. We lay 200 tons or 40,000 square feet a day.

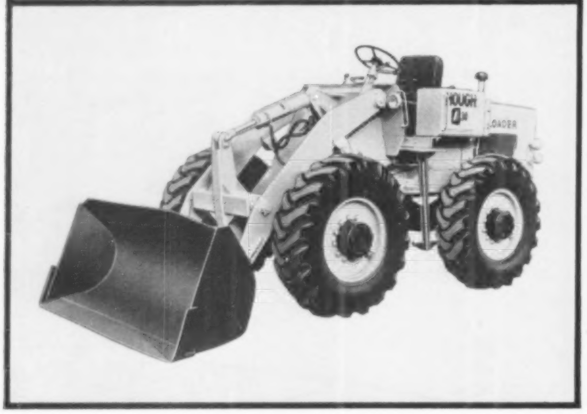
W. F. PRIDAY
Director of Public Works
Anaheim, Calif.

Who else...

...but **HOUGH** provides these facts?

This factual data on PAYLOADER four-wheel-drive, rubber-tired tractor-shovels in each of 1, 2, 3, and 4 yard sizes points up the advantages of their design, performance and safety features. Comparisons include all competitive units from manufacturers' printed specs as of April 1, 1960.

1 cu. yd. H-30 PAYLOADER®



More Power: H-30 has 17% more horsepower than next most powerful machine in this category.

More Dumping Clearance and Reach: The H-30 has 4″ more clearance and over a foot more reach.

Safety Boom Arms: All moving members pivoted in **front** of operator. **Exclusive** on the H-30.

Safety Ladder: Makes access to the operator's compartment easy and safe. Another **exclusive**.

"Full" Power-Shift Transmission: No manual shift, working to travel range. "PAYLOMATIC" transmission Hough designed and manufactured.

Four-Wheel-Brakes: Exclusive on the H-30 they permit equal stopping in both forward and reverse. Also sealed against dust and dirt.

"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged. H-30 **exclusive.**

Closed Hydraulic System: Sealed and pressure-controlled hydraulic reservoir with renewable cartridge-type filter and fine-mesh screen. Another **exclusive** H-30 protective feature.

Separate Oil-Cooling Radiator: A fan-cooled "oil-to-air" heat exchanger cools transmission and torque-converter oil. Another **exclusive.**

Easy Accessibility: No other comparable unit has H-30 accessibility. Dip stick, filler cap, batteries, connections and service points reached from ground level.

2 cu. yd. H-70B PAYLOADER®

More Power: H-70 has more horsepower than the average of 9 competitive gas and diesel units.

More Dumping Clearance: The H-70 has 4″ more clearance than average of 9 competitive units.

Safety Boom Arms: Underslung design keeps the operator safe from all moving members.

Safety Ladder: Makes access to the operator's compartment easy and safe. An H-70 **exclusive.**

"Full" Power-Shift Transmission: No manual shift from work to travel ranges. "PAYLOMATIC" transmission Hough designed and manufactured.

Four-Wheel-Brakes: Hydraulic, power-boosted four-wheel-brakes with separate parking brake. Front brakes sealed against dust and dirt.

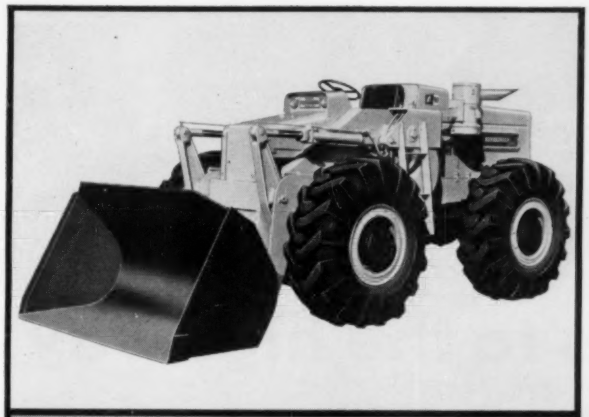
"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged. A Hough "first".

Closed Hydraulic System: Sealed and pressure-controlled hydraulic reservoir with renewable cartridge-type oil filter and fine-mesh screen.

Separate Oil-Cooling Radiator: A fan-cooled "oil-to-air" heat exchanger cools transmission and torque-converter oil. An H-70 **exclusive.**

Torque-Proportioning Differentials: Transfer up to 24% more power to best traction wheels.

Easy Accessibility: Extra attention has been given to providing utmost accessibility to all service points.



3 cu. yd. H-90B PAYLOADER®

More Power: H-90 has 24 more horsepower than the average of 8 competitive diesel models.

More Dumping Clearance: The H-90 has 10″ more clearance than average of 8 competitive units.

Safety Boom Arms: Underslung design keeps the operator safe from all moving members.

Safety Ladder: Makes access to the operator's compartment easy and safe. An H-90 **exclusive.**

"Full" Power-Shift Transmission: No manual shift from work to travel ranges. Improved units have better operating characteristics.

Four-Wheel-Brakes: Power air brakes with big braking area on all four wheels assures easy, safe handling of the H-90 at all times.

"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged. H-90 **exclusive.**

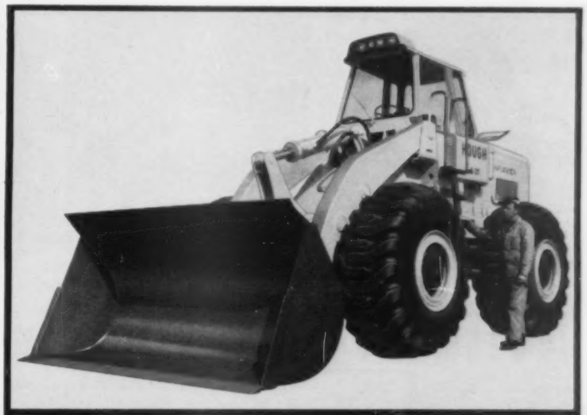
Closed Hydraulic System: Sealed and pressure-controlled hydraulic reservoir with renewable cartridge-type oil filter and fine-mesh screen. Another H-90 **exclusive** protective feature.

Separate Oil-Cooling Radiator: A fan-cooled "oil-to-air" heat exchanger cools transmission and torque-converter oil. An H-90 **exclusive.**

Torque-Proportioning Differentials: Transfers up to 24% more power to best traction wheels.

Easy Accessibility: Extra attention has been given to providing utmost accessibility to all points requiring checking and service.

Power-Steering: All "PAYLOADER" four-wheel-drive units have hydraulic power-steering.



4¼ cu. yd. H-120 PAYLOADER®

More Power: H-120 has 38 more horsepower than next most powerful machine in this category.

More Dumping Clearance and Reach: H-120 has 4″ more clearance, 6″ more reach than next unit.

Safety Boom Arms: All moving members pivoted in **front** of operator. **Exclusive** on H-120.

Safety Ladder: Makes access to the operator's compartment easy and safe. Another **exclusive.**

"Full" Power-Shift Transmission: Hough-built, full-reversing, constant-mesh, countershaft-type with balanced rotating hydraulic clutches.

Four-Wheel-Brakes: Power air brakes with large braking area assure easy, safe handling at all times.

"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged. H-120 **exclusive.**

Separate Oil-Cooling Radiator: A fan-cooled "oil-to-air" heat exchanger cools transmission and torque-converter oil. Another **exclusive.**

Better Balance: Exclusive use of lightweight, extra-strong "T-1" steel for box-section boom arms saves over a ton of "dead-weight" on the load-carrying end.

Better Stability: Counterweighted by approved use of dry ballast material in rear tires. Lower center of gravity, 50% of weight below rear axle. **Exclusive.**

Protection: Special dry-type air cleaner gives 99.8% dust removal efficiency under most adverse conditions. Sealed, pressure-controlled hydraulic system has cartridge oil filters and fine-mesh screens. **Exclusive.**

Extras: Canopy-type cab with windshield wipers and special lights is standard equipment.

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.

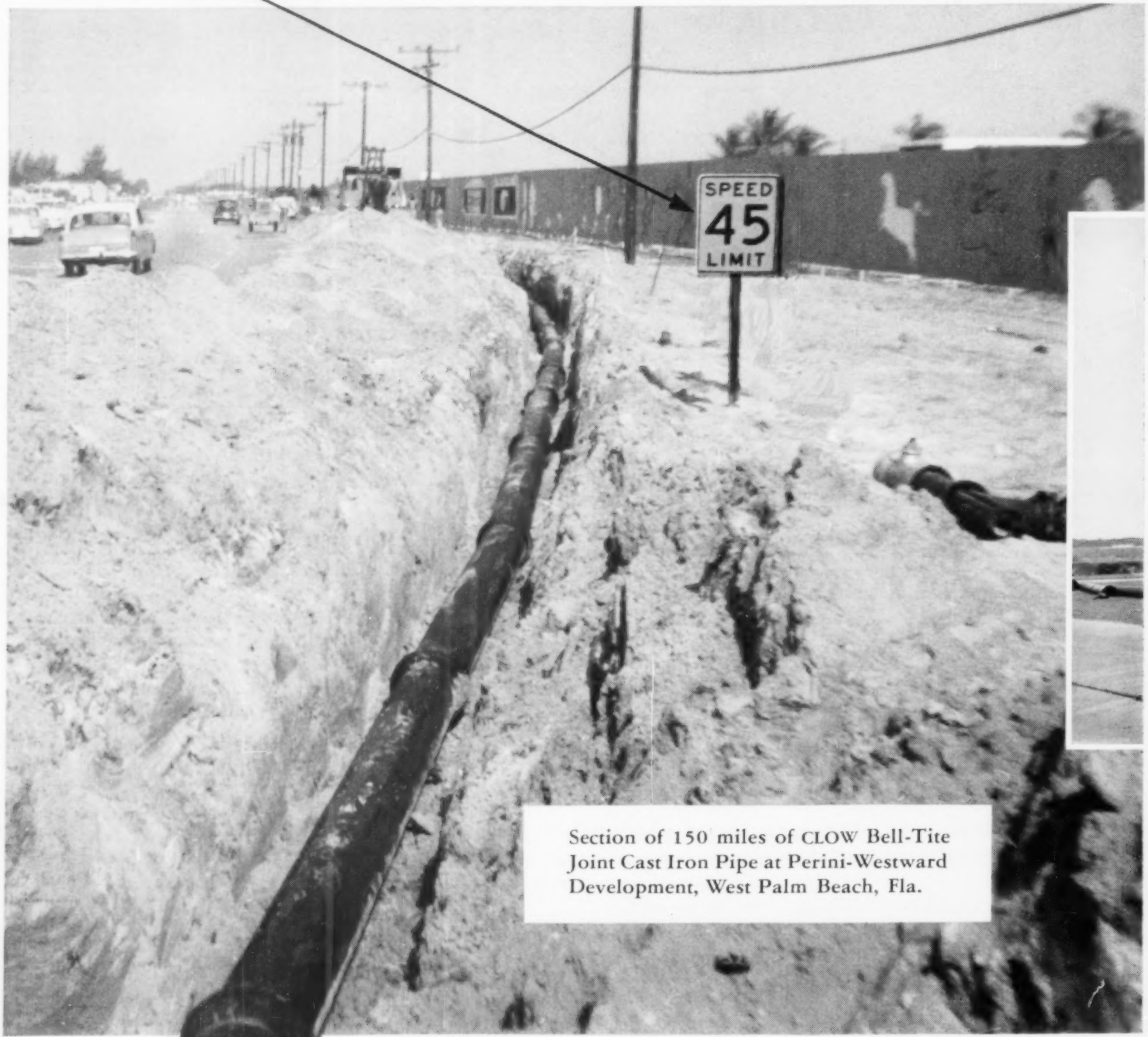
HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO. 5-B-1
710 Sunnyside Ave., Libertyville, Ill.
Send data on all "PAYLOADER" models and attachments.
Name
Title
Company
Street
City State

CLOW

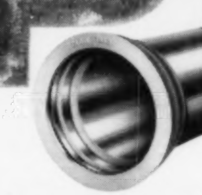
This SIGN applies to the highway



Section of 150 miles of CLOW Bell-Tite Joint Cast Iron Pipe at Perini-Westward Development, West Palm Beach, Fla.

Clow Cast Iron Pipe Plants are located at
BENSENVILLE, ILLINOIS • BIRMINGHAM, ALABAMA • COSHOCTON, OHIO

CAST IRON PIPE



There is no limit to how fast you can lay

CLOW Bell-Tite® JOINT CAST IRON PIPE

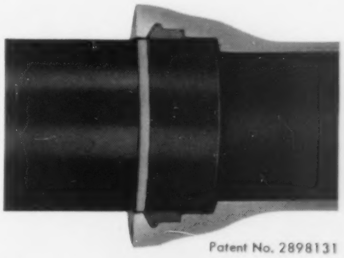
You can install CLOW Bell-Tite Joint Cast Iron Pipe as fast as you can dig a shallow trench. Photo shows the back hoe which clawed open the trench lowering a length of Clow pipe into it.

Over 150 miles of Clow Bell-Tite Joint pipe are the life lines of the water and sewage facilities for this Perini-Westward Development at West Palm Beach, Fla. Time-saving installation plus the economy of material—no accessory but a single molded rubber gasket—are important factors in this $4,000,000 waterworks project installation. One of the owners of this "City within a City" is Louis R. Perini, chairman of the board of the Milwaukee Braves and president of the Perini corporation.

CLOW Bell-Tite Joint Cast Iron Pipe can speed your installations, too. Let us tell you about its many advantages.

Clow Bell-Tite Joint Pipe saves time and money

Assembly is easy and rapid. Just wipe the joint clean, lubricate and push spigot into the bell. When yellow stripe is no longer visible, joint is bottle tight. A single rubber gasket is the only accessory. There are no bolts, no nuts, no followers, no couplings, no extras.



Patent No. 2898131

CLOW CAST IRON PIPE

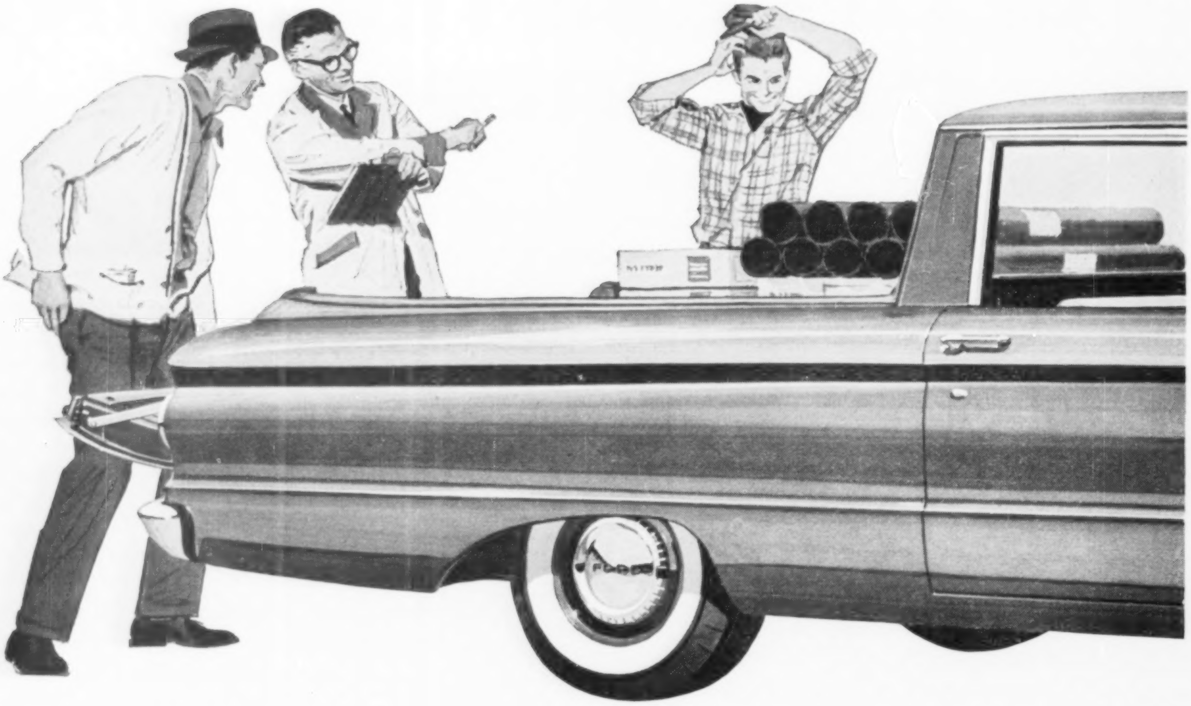
JAMES B. CLOW & SONS, INC.
201-299 North Talman Avenue, Chicago 80, Illinois

Subsidiaries:

Eddy Valve Company
Waterford, N.Y.

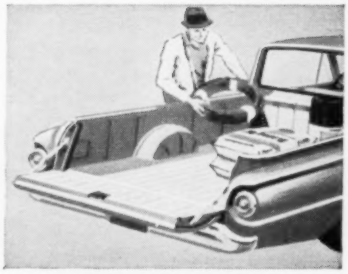
Iowa Valve Company
Oskaloosa, Iowa

Completely new—Ford's Falcon pickup costs you less the day you buy and every day thereafter! Up to 30 miles on a gallon! Single-unit construction. Bolted-on front fenders for easy replacement! Lower oil costs, tire costs, all-around maintenance costs!



NEW Ford Falcon RANCHERO

All-new Six. Modern Short Stroke engine with plenty of turnpike power! There's 4,000 miles of driving between oil changes!



Big 6-foot box . . . nearly 8 feet of load length with tailgate flat! Load capacity is ample for most jobs. Loading height is a low 27 inches!

It looks like pure pleasure—and it is. But when it comes to saving money, Ford's new Falcon Ranchero is all business!

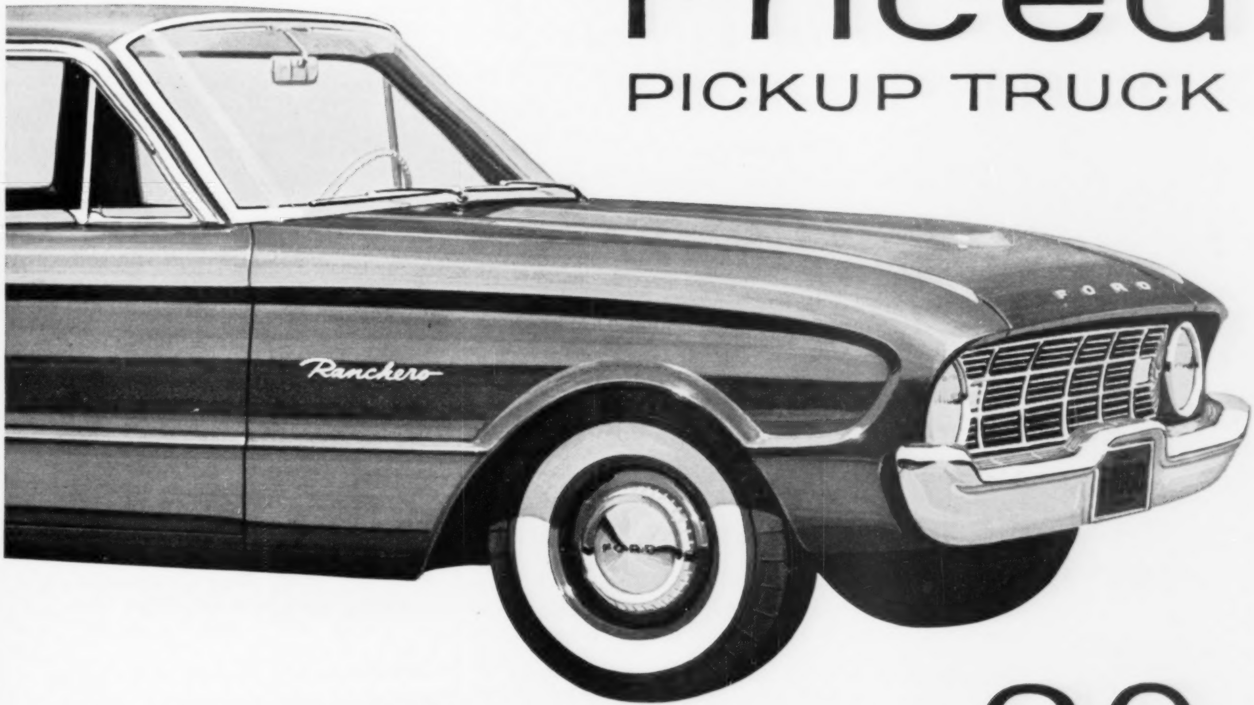
As a start, it's priced lower* than any other pickup in America. It gives you spectacular gas mileage—up to 30 miles on a single gallon, yet its new 90-horsepower Six is geared to handle a full-sized load.

The Ranchero's solid single-unit construction, its bolted-on front fenders, and other low-cost replacement parts . . . all mean you'll save on maintenance costs! In its big 6-foot box there is room a-plenty for nearly any pickup job . . . and in its beautifully styled cab there is room for three in stretch-out comfort!

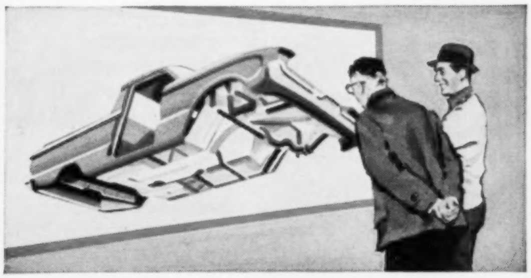
See your Ford Dealer and action-test the Falcon Ranchero—the new kind of pickup that's full-sized for work, over-size in comfort, but only half-size in costs!

*Based on latest available manufacturers' suggested retail delivered prices with comparable standard equipment.

Lowest Priced* PICKUP TRUCK



up to 30 miles per gallon!



Single-unit construction . . . It's tighter, quieter, longer lasting. All main underbody structural members are heavily zinc-coated for greater durability . . . protects against rust and corrosion. Front fenders bolt on to cut maintenance costs!

FORD TRUCKS COST LESS

"NO FOOLING WE WANT...

1
3
5
PERMA-LINE !

us kids like it
...because PERMA-LINE stripes don't rub off at school crossings like paint does."

Perma—Lion
King of Traffic Lines

Mr. Traffic Engineer, you owe it to your community's children to protect their future with sound traffic safety planning.

That's why PERMA-LINE thermo-plastic compound belongs in your future...and theirs. Because only PERMA-LINE is still on the job on any street—"when paint just ain't!"

PERMA-LINE traffic markings apply at 400° F. and last 8-to-10 times longer than paint...with one easy application. You owe it to yourself—and your community—to save time, money and trouble with wonderful, wonderful PERMA-LINE. You'll be so glad you did.

perma-line

VEON CHEMICAL CORPORATION • 22-09 BRIDGE PLAZA NORTH • LONG ISLAND CITY 1, N.Y.
PERMA-LINE (CANADA) LTD. • 299 BERING AVENUE • TORONTO, CANADA

For your free copy of our brochure showing latest installations and specifications, return this coupon.

NAME________________ TITLE ________________
ADDRESS ________________________________
CITY________________ ________________

(Continued from page 5)

more than double—from a 1960 estimate of $33,000,000 to more than $70,000,000 for the year 1970.

We, at Kerrigan, recognize the steady growth of this market and in order to prepare for it we are expanding our facilities, improving our equipment and providing better service for our customers through the addition of experienced representative in seven territories.

TED NEMES, *Sales Manager*
Lighting Standard Division
Kerrigan Iron Works Co.
Nashville, Tenn.

Permission to Reprint Requested

May we have permission to republish in our departmental publication, "Public Health News" the article entitled "A Good County Health Department" which appeared in the September 1959 issue of your publication?

DONALD S. BENSON
New Jersey Department of Health
Trenton, New Jersey

EDITOR'S NOTE: Permission gladly granted.

Incinerator Design

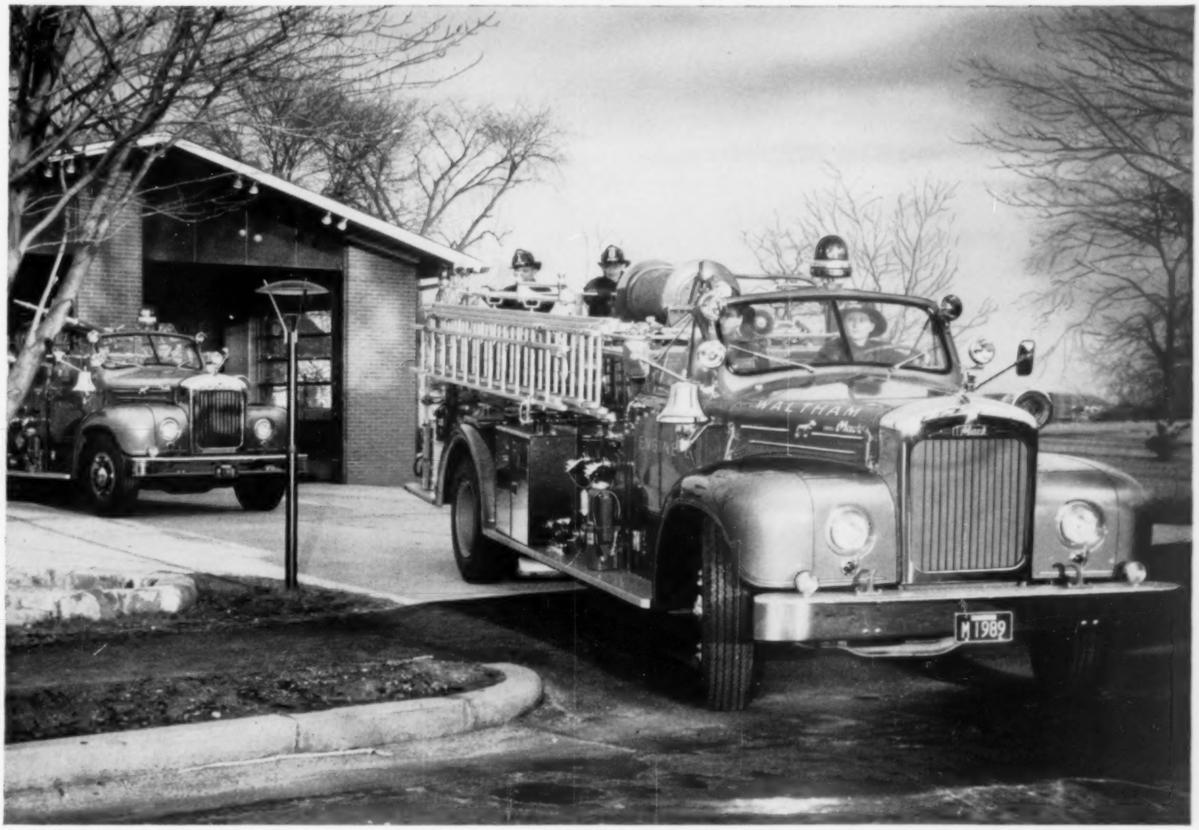
The March issue of THE AMERICAN CITY carries an article on incinerators which impressed me a great deal ("When to Build an Incinerator," p. 118). Would it be possible to get a dozen reprints of this? We would like to use them to inform our younger engineers about incinerators and their details.

F. C. WARRINGTON, *Manager*
Plate Sales Department
Pittsburgh-Des Moines Steel Co.
Des Moines, Ia.

Foamed Asphalt

I have to say THE AMERICAN CITY is a well read magazine from all the correspondence I have received since the article on foamed asphalt was printed (p. 88, December 1959). I have had letters from Los Angeles County, Princeton, N. J., Lexington, Ky., Lamar, Colo., and many others. We have also had many visitors to Dubuque inspecting the surfacing, and I'm happy to report that, with the winter almost gone, the surfacing is reacting better than we ever anticipated.

K. J. CULLEN
City Engineer
Dubuque, Iowa



Latest addition to the Waltham, Massachusetts, fleet of Mack fire apparatus are these two recently-delivered 1000-gpm triple-combination pumpers. One features a 300-gallon booster tank, extension and roof ladders, and complete foam equipment, in addition to provision for 2000 feet of hose. The second unit features a 200-gallon booster tank, extension ladder and a 1500-gpm deck gun. All six earlier Mack apparatus are still in active service, including the first unit, delivered in 1939.

For over 20 years

Waltham has relied on Macks for dependable fire protection

Since 1939, when it first purchased Mack apparatus, the City of Waltham Fire Department time and again has placed its reliance on Mack apparatus.

Latest in its choice of Mack apparatus are two Model B-95 1000-gpm triple-combination pumpers. These units bring to eight the number of Mack units Waltham has put in service in the last 20 years.

Waltham has good reason to rely on Mack apparatus. Rapidly growing, the community also protects many manufacturing plants within its corporate limits, and needs the most effective fire-fighting equipment it can get.

There's a Mack apparatus for your every fire-fighting requirement—cab-forward or conventional . . . choice of engines headed by the famed Mack Thermodyne® 707C . . . standard or automatic transmission . . . single rear axle or rear 4-wheel Mack Balanced Bogie . . . air or hydraulic brakes . . . and the gear ratios and equipment you need.

Ask your Mack representative to show you how Mack apparatus has earned its reputation as the finest in the field. Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

7486

MACK

FIRST NAME FOR

FIRE APPARATUS

COMPLETE LINE OF PUMPERS—500 to 1250 GPM . . . SQUAD AND HOSE WAGONS . . . AERIALS 65′ to 144′ . . . COMBINATION LADDER TRUCKS

Trolling on a State Reservoir—Photo by Ted Croner

Reservoirs mirror many things

. . . and commercial banks are part of the picture

Sometimes the calm surface reflects recreation. Sometimes it's protection against fire or salvation for parched plant roots. But always the clear, clean shimmer of the reservoir reflects drinking purity and public health.

And here's the way it comes about.

When communities need water supplies nowadays, they very often vote to finance them with revenue bonds. These bonds are offered for sale on the open market by the community authority in charge. They yield interest to buyers out of revenue collected from

the periodic payments of water bills.

By this simple free economy exchange a rural resident's invested savings can help finance a big-city dweller's water supply. And the rural investor earns his interest as the big-city dweller pays his water bill.

But one thing more is important to the whole process of piping water to a community.

It is trusteeship for the bonds issued by the community authority.

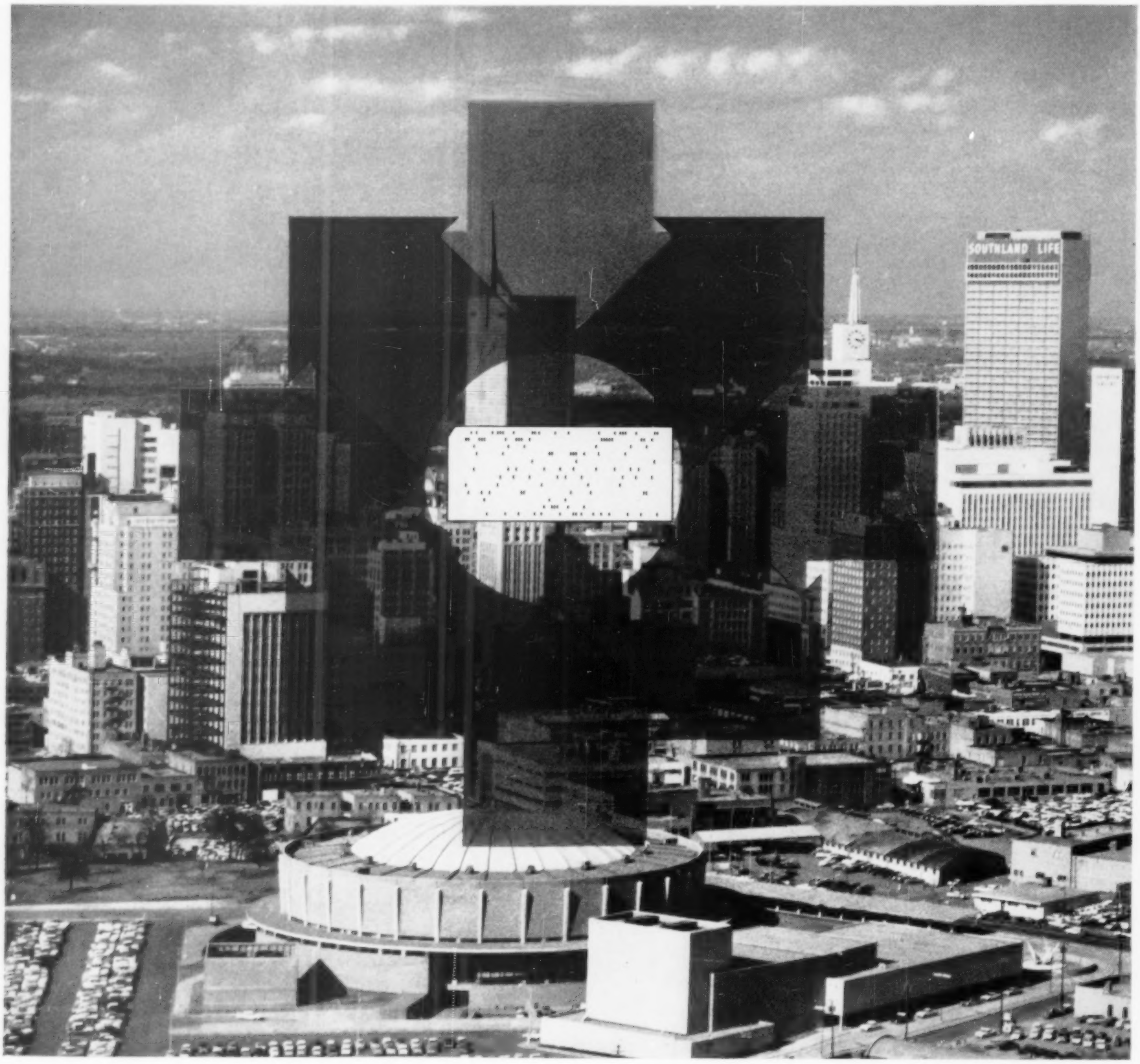
This trusteeship is vested in commercial banks. Their trust specialists see to it that the community water authority meets all obligations to its bondholders.

The end result of this vigilant trusteeship is orderly pay-as-you-go financing for the community, protection for its bondholders and water on tap for each resident.

The Chase Manhattan Bank, a leading trustee for revenue bonds in the nation, is always ready to serve the needs of any state, county or community in cooperation with its local bankers.

THE
CHASE
MANHATTAN
BANK

CHARTERED IN 1799
Head Office: New York 15, N.Y.
Member Federal Deposit Insurance Corporation



Growing Dallas controls 10 city departments centrally with IBM punched card system

With one IBM punched card system, the City of Dallas achieves uniform accounting in ten major service departments.

City officials have been relieved of most accounting detail. With the IBM punched card system, they get an up-to-the-minute picture of each city department. Current operating reporting enables city officials to control budgets and provide even better service promptly and at substantial savings.

It will pay you to find out more about the Dallas Punched Card Story. Call your local IBM representative for details or demonstration.

City of Dallas uses IBM punched cards to:

1. prepare payrolls and records
2. maintain budgetary control
3. bill and control real and personal property taxes
4. bill and control paving assessment
5. bill and control water sales
6. report and control inventories on water stores
7. summarize vehicle operating costs
8. handle accounting and statistics for police courts
9. report vital statistics
10. survey traffic

All IBM data processing equipment may be purchased or leased.

Mr. E. Lynn Crossley, City Auditor, Dallas, Tex.

IBM® DATA PROCESSING

First Woman Mayor In U. S. Reaches 100

America's first known woman mayor celebrated her 100th birthday last March.

Mrs. Susanna Madora Salter, mother of eight and a widow since 1916, was mayor of Argonia, Kan. in 1887. Her election was a political trick that backfired. Women in Kansas received the right to vote in 1887 and the Women's Christian Temperance Union took a stand on the wet-or-dry issue that marked the Argonia town council election that year.

A group of wets prepared a slate of candidates with the 27-year-old Mrs. Salter, a WCTU official, as mayor. They reasoned that she would draw only a few votes and that the WCTU would be discredited as a political organization. She received a two-thirds majority.

She described herself as a "good Republican" and says she never misses an opportunity to vote. She now lives with one of her daughters, Mrs. M. O. Harris in Norman, Oklahoma.

Her other living children are Leslie E. Salter, U. S. Circuit Court judge in Chicago, William E. Salter, curator of the geological department of the Smithsonian Institute, Washington, D. C.; Lewis Salter, dean emeritus of the University of Oklahoma College of Fine Arts, and Mrs. Bertha E. Stover, Wichita, Kan. ◄◄

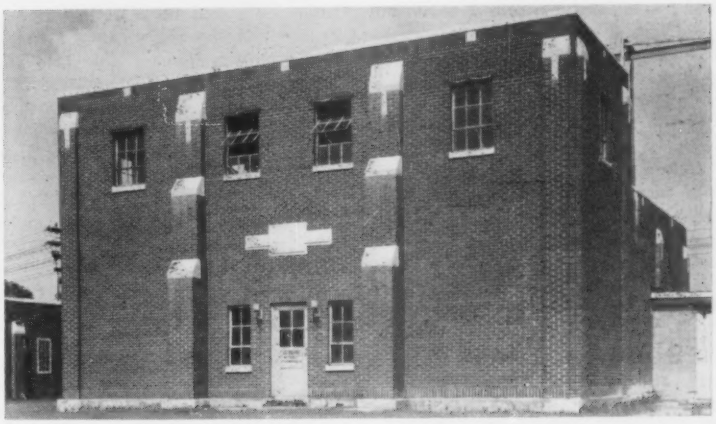
Hartford Starts $35-Million Renewal Program

"Constitution Plaza," an 11-acre redevelopment project in downtown Hartford, started active construction last month, and is scheduled to be completed in 1963. It will cost about $35 million. Demolition for the project was completed last year.

In addition to a modern television and radio facility for the Travelers Broadcasting Service Corporation, present plans call for two 16-story office buildings, retail commercial buildings and a large parking garage for the area. Other buildings, including a hotel, may be added as the job progresses.

Sponsor of the project is Constitution Plaza, Inc., which is owned jointly by the Travelers Insurance Company and F. H. McGraw & Company. Assignment of the project was approved by the Hartford Redevelopment Agency and the federal government recently. ◄◄

Use Northern Gravel for Rapid Sand Filter



This is the Water Softening Plant at Evansville, Wisconsin. Another of the many, many such plants throughout the United States that have used filtering sand and gravel from the Northern Gravel Company.

Filter Sand Specifications are carefully laid out. The Effective Sizes and Uniformity coefficients used by Consulting Engineers and also recommended by the American Water Works Association are the result of long years of research and experience.

The Northern Gravel Company is equipped to give you prompt shipment whether it be one bag or many carloads, exact to specifications. Filter sand can be furnished with any effective size between 0.35 MM and 1.20 MM.

Chemical Quality of the filter sand is also important. It must be hard, not smooth, and free of soluble particles. This requires perfect washing and grading facilities. We have every modern device for washing, drying, screening and testing.

Filter Gravel supporting the Filter Sand Bed, must be in turn, properly graded to sizes calculated to support the Filter Sand, and be relatively hard, round and resistant to solution.

Northern Gravel has no equal in facilities and our reserves of both sand and gravel are inexhaustible. Northern Gravel Company has been in business over 45 years. We guarantee uniformity of products and our records enable us to duplicate your requirements on short notice. Our location is central and we have commodity rates in every direction.

Northern Gravel Company

Box 307 **Muscatine, Iowa** Phone: AMherst 3-2711

New Annexation Laws Aid North Carolina Cities

Three annexation bills enacted by the North Carolina General Assembly will make growth easier and more orderly for the state's cities and towns.

The emphasis in the new acts is on planning and permissive action of municipalities. The statutes embody the principle that cities by right must expand their boundaries. Perhaps the most significant feature of the acts is the attempt to define "urban land" by prescribing specific standards for the area proposed for annexation. They are:

1. **The area must be contiguous to the municipal boundary**
2. **It must not include part of another incorporated municipality**
3. **It must be contiguous to the municipal boundary for one-eighth of the total external boundary of the area to be annexed.**

The purpose of Item 3 is to prevent the city from making extensive strip annexations along highways. Any segment of the area must meet one of five additional standards, with the particular standard depending upon the development pattern in the city and the area.

The laws require the municipality to show that the area to be annexed can be provided with police and fire protection, water and sewer lines, garbage collection, street maintenance, and other urban services on the effective date of annexation. This showing of the city's ability to provide services must be based on a comprehensive study—required by the statute—of the perimeter area. The provision which seeks to insure that cities will be able to furnish necessary services to the territory precludes annexation of an area by a financially unstable city.

One of the three acts prescribes a detailed annexation procedure which includes provision for a governing board's resolution of intent to annex, publication of notice, public hearing, and findings of fact by the council. Aggrieved property owners have a choice of appeal procedures. If a court rules that any statutory requirement was not met by the city and material injury to substantive rights has resulted, it may remand the annexation ordinance to the governing body for action in conformity with a court order.

The 1959 acts supersede a 1947 statute which permitted a city council to annex fringe areas by ordinance but declared that the ordinance would be voided if 15% of the qualified voters in the area to be annexed petitioned for a special election. This provision resulted in the defeat of 40% of the annexation proposals submitted to a vote in North Carolina cities since 1950 and discouraged governing boards from supporting many additional annexation proposals.

Although at least two suits testing the constitutionality of the statutes have been filed by fringe-area residents since passage of the acts last year, George H. Esser, Jr., Assistant Director of the Institute of Government, University of North Carolina, and a leading figure in drafting the legislation, notes an air of "qualified optimism" among the state's city managers, planners, and utility engineers that the standards will work. ◄◄

GUARANTEED 10 YEARS!

CAMEO

PORCELAIN-ENAMEL-ON-ALUMINUM HIGHWAY GUIDE SIGN PANELS

Permanent! Porcelain enamel assures life-long color. Chip-proof finish, Rust-Proof, and Weather-Proof!

Low Cost! CAMEO A-10 Guide signs actually *cost less* than other signs *without* porcelain enamel's permanence. A double bargain! Plus – maintenance costs are completely eliminated!

Light, Strong! Tempered aluminum face sheets, porcelain enameled, are laminated to honeycomb core in a sandwich construction. Sign panels weigh only 1½ lbs. per square foot. They're easy to handle and install and withstand more than 100 mph windload!

Reflectorized Aluminum Letters, borders and arrows are white porcelain enamel, with AGA Stimsonite reflectors for outstanding night visibility.

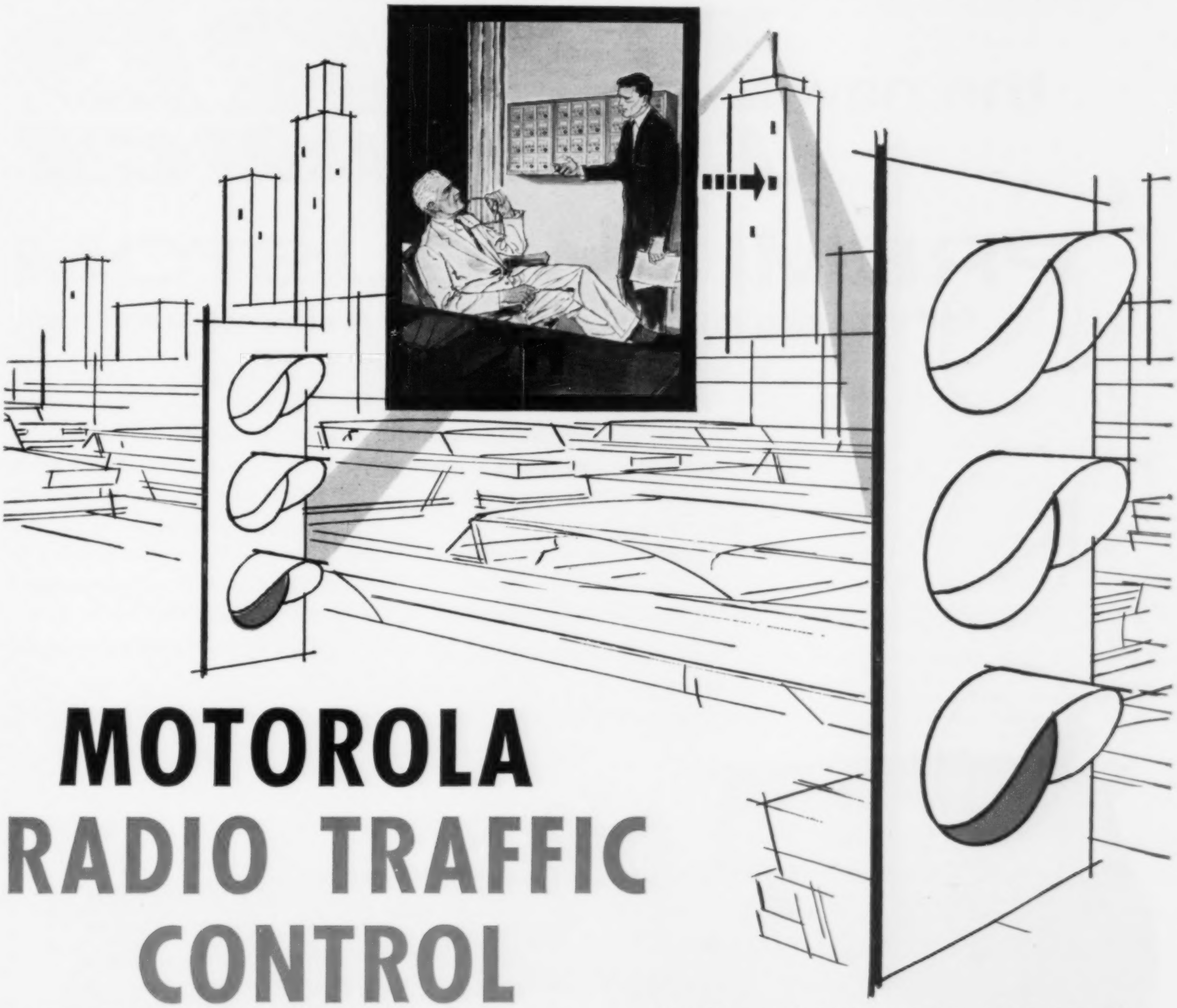
39
Manchester Ave
Grand Ave
RIGHT LANE

THE FINEST in materials, the most advanced techniques, and almost 50 years experience in the industry make CAMEO Highway Guide Signs the *best investment* a signing planner can make. Call for a CAMEO engineer to assist you, or write for complete specification data and samples.

Dealer Inquiries Invited

CALIFORNIA METAL ENAMELING CO.
6904 E. Slauson Ave. • Los Angeles 22, California
RAymond 3-6351

now...
the ECONOMY and FLEXIBILITY of radio with the RELIABILITY of TRANSISTORS



MOTOROLA RADIO TRAFFIC CONTROL

Transistors make the difference! Now you can plan for CITY-WIDE traffic control with radio's economy and flexibility—with year-in, year-out reliability of Motorola's fully transistorized intersection receivers.

Here's how it works . . . Centrally-located radio reaches all areas *economically*—controls intersections individually or in any combination. At the intersection the receiver-decoder equipment operates without attention—no adjustments are necessary or possible in the decoder circuitry.

All programing changes are made at the radio control center. Here you get new control *flexibility*—with high speed, high capacity automatic programing that can be changed instantly when needed. At the control center, an illuminated display panel shows the program in effect for the *entire* system, not just the last transmitted program for a few specific intersections. Pushbuttons enable manual control of any function.

With completely transistorized circuitry, sealed tone units and heavy-duty relays at the intersection—you're assured of unsurpassed *reliability*, so necessary for traffic control. Learn how Motorola radio can do the job as a new system, or to work with your present plant. Write today.

MOTOROLA RADIO TRAFFIC CONTROL

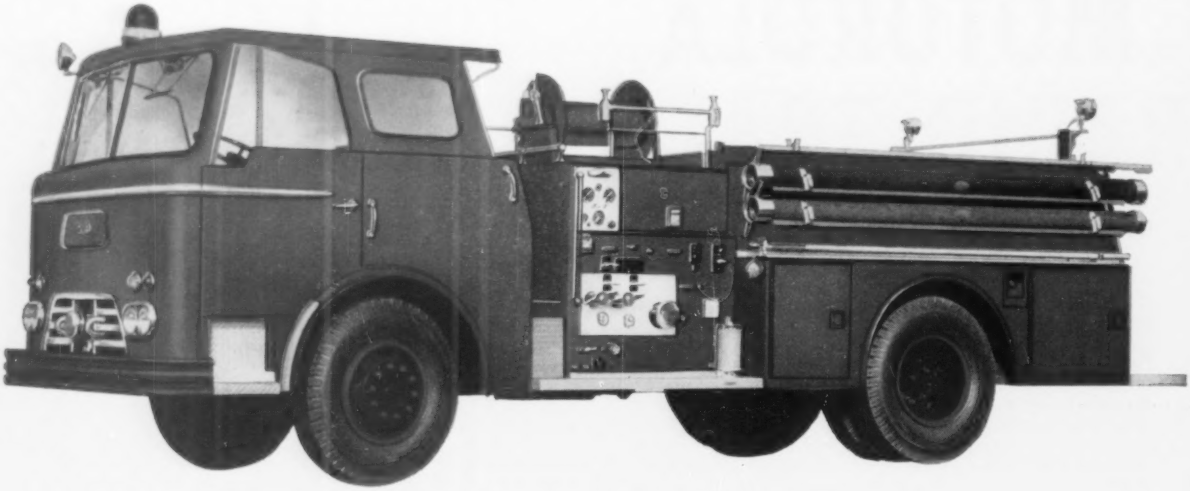
Motorola Communications & Electronics, Inc., 4501 Augusta Blvd., Chicago 51, Ill. • A Subsidiary of Motorola Inc.

the new **WARD LAFRANCE**

PREMIUM CUSTOM

for the price and delivery time of an improvised truck

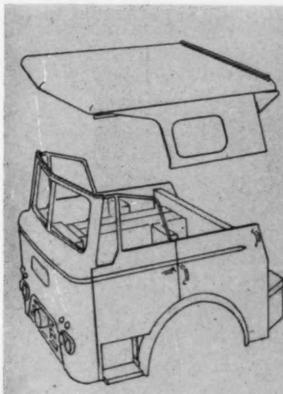
The Ward LaFrance PREMIUM CUSTOM is designed and engineered from the tire treads up to the beacon light for just one specific purpose—to give you the best fire-fighting machine in the world. Our response to a growing demand for custom-tailored trucks at a commercial-truck price comes with the creation of the PREMIUM CUSTOM. Long years of engineering experience and modern production techniques combined with an acute awareness of the varied needs of different communities have made it possible. A wide range of completely-engineered, interchangeable options can now be quickly adapted to meet every fire-fighting requirement. And delivery time is considerably shortened.



16 PREMIUM CUSTOM MODELS TO CHOOSE FROM

Write, wire or telephone the factory or your nearest Ward LaFrance Dealer.

WARD LAFRANCE

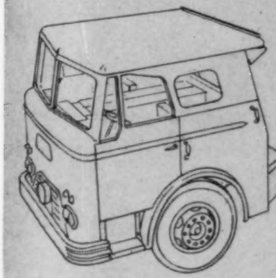


NEW! ADD-A-TOP

Al-steel, removable roof which converts an open cab into a weather-proof, closed cab in minutes.

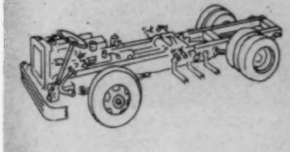
NEW! SEVEN-MAN CAB

Seating space to spare with cycloramic view for driver and officer; 5 crewmen ride comfortably in rear safety position.



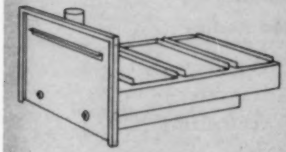
NEW! CAB-OVER-ENGINE

Places power plant ahead of front axle for greater safety, visibility and maneuverability.



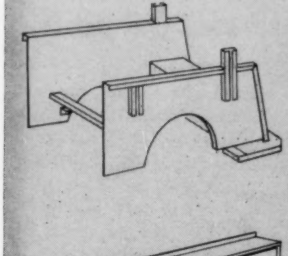
NEW! CHASSIS

Wide track front axle; front shock absorbers; rugged, carbon-steel frame with riveted members; heavy-duty cam and roller steering gear; heavy-duty, 3-rib, wrap-around bumper.



NEW! TANK

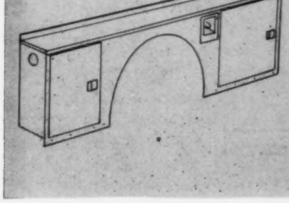
Removable tank with three easily-removed covers for spot inspections; zincolate interior coating and 10-gauge steel throughout; 350, 500, 750, 1000 gallon tank sizes available.



NEW! BODY

Side sheets made of 12-gauge, cold-rolled, stretcher-leveled steel. Hose body capacity of 1800 ft. of 2½" hose with 350 gallon tank. Readily-removable hardwood, slatted floor-racks for hose ventilation.

Three large compartments at rear of body—two enclosed, one open; large enough to house portable pump and generator.

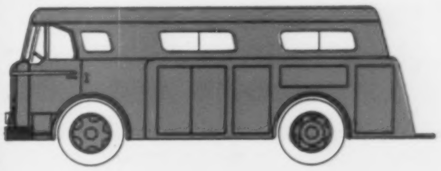


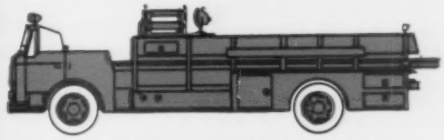
NEW! COMPARTMENTS

Four, large bolt-on compartments—two right and two left; allows total use of more compartment space than can be found on any comparable model.

Additional exclusive features of the new Ward LaFrance utility-packed unit:

- Shortest wheel-turning radius—24 ft.
- Shortest front overhang—56"
- Shortest wheelbase—150"
- Shortest overall length—288"
- Shortest overall turning radius—less than 27 ft.





PREMIUM CUSTOM ALSO AVAILABLE IN RESCUE AND SALVAGE VEHICLES AND QUADRUPLES.

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Three years of actual field experience prove Builders' transistor-tone to be most advanced, benefit-packed system for centralizing operations of widespread treatment plants:

- power savings . . . up to 95%
- space savings . . . up to 50%
- maintenance savings . . . no tubes to heat up or replace
- increased reliability . . . new circuit design
- longer life . . . transistor life up to 10 times that of tubes
- ease of assembly, interchangeability, installation, and system expansion . . . plug-in components
- interference-free control . . . over a single circuit

B-I-F offers *complete system* responsibility. For the added economies and reliability only fully integrated systems can provide, investigate B-I-F's extensive line of water and sewage works equipment.

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BIRMINGHAM, ALABAMA
SANITARY LANDFILL
AIRPORT SITE
HOURS OF OPERATION
KEEP BIRMINGHAM CLEAN

BIRMINGHAM, ALABAMA
SANITARY LANDFILL
SHERMAN HEIGHTS SITE
KEEP BIRMINGHAM CLEAN

The large sign at the left, finished in color, informs passing motorists that a sanitary-landfill operation is being conducted on the site. The sign above was erected at Birmingham's newest site where a sanitary-landfill operation will be used to fill this gully.

Colored Signs Identify Sanitary Landfills

A little more than a year ago the City of Birmingham, Ala., received so many protests against its garbage dumps that it abandoned them in favor of a sanitary landfill. However, complaints persisted, so Public Improvements Commissioner J. T. Waggoner held a public tea party at the site to squelch odor complaints. (THE AMERICAN CITY, January 1959, p. 22.)

The tea party's success led to another idea—that of identifying the operation to let passing motorists know what is really going on in the area. To carry out this plan Commissioner Waggoner erected a four-foot-by-six-foot sign in color, which proclaims the operation as a sanitary landfill with the injunction "Keep Birmingham Clean." It indicates pride on the part of the city in its economical but sanitary means of refuse disposal.

The city is now operating a second landfill site on the opposite side of the town to reduce haul distances. The past year's record of good, clean refuse disposal helped convince persons residing in the vicinity of the new area that all is not as bad as it sounds. In fact, the neighbors around the new site have expressed their satisfaction at filling in an old gulley in order to make a new street.

Both the county and state health departments have commended Birmingham on its excellent sanitary landfill operations. ◄◄

An Urban County Adopts a Master Plan

Orange County, Calif., an area largely urban with some 700,000 population, recently adopted a plan designed to meet its ultimate refuse-disposal needs. The need for such a plan becomes apparent when one considers anticipated growth—between 2 and 2½ million persons by 1980 and maximum growth of 3 million by the year 2000.

The report sets forth the following conclusions and recommendations:

1. The county should retain its present policy of providing adequate and equitable disposal facilities for the county as a whole.

2. Collection and short-haul transport of refuse is best administered on the local level as is being done at present.

3. An ordinance adopted in 1946 when garbage was a much larger component of domestic refuse than it is today should be amended to permit the disposal of residential garbage at those sites (sanitary landfill) where the presence of this material will not cause pollution of surface or underground waters or create a public nuisance.

4. Because of the imminent closure of two major disposal sites, steps should be taken toward the establishment of a transfer station in the area. By 1965 three transfer stations will be needed.

5. New long-term facilities should be located in one section of the county at this time to avoid a critical situation at the time of closing two stations, set for the near future.

6. The county should recognize that it is difficult to look too far into the future; consequently the plan as adopted does not fix the final solution to the problem but can be altered as needs and experience dictate.

The report, consisting of 57 pages plus exhibits, can be obtained from the County of Orange, Highway Department, Court House Annex, Santa Ana, Calif., for 75 cents a copy. ◄◄

Western Springs Water Tower Symbolizes Local Government

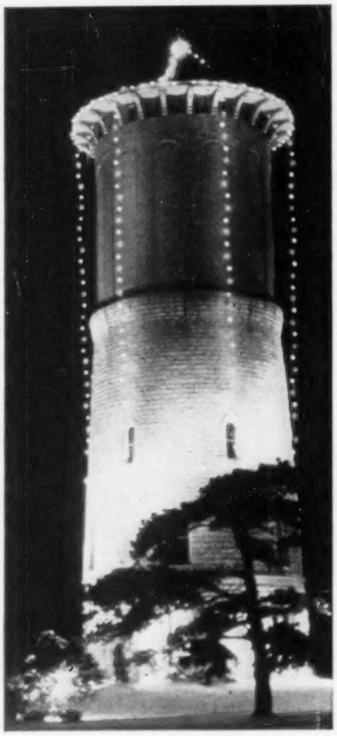
Western Springs, Ill., is one of the few, if not the only city in the nation whose water tower is a municipal building, civic landmark, and symbol of local government. We are a suburb of Chicago with a population of 11,000. Our water tower is located on Tower Green, a small park in the business district.

It is a brick-and-masonry steel-lined structure built in 1893 and still functioning as part of our water system. It stores 160,000 gallons, providing the only overhead storage and pressure for our entire village distribution system.

It also was our Village Hall until 1957. It housed the general offices, building department, police department, and was the place where the Village Board met and deliberated on local problems. Today, the tower still houses the police department and the police magistrate's court.

In 1957, the Village and the Chamber of Commerce jointly undertook a program of lighting the tower for the Christmas season. To do this, they strung 360 colored lights from the top of the 108-foot structure. This has been repeated each year. In 1957, the Rotary Club donated a living Christmas tree which was planted in front of the tower. Each year the American Legion post decorates the tree.

JAMES K. GIESE
Asst. Village Manager



Western Springs, Ill., decks its water-tower landmark with Yuletide lights during the Christmas season. The structure has served also as a municipal building since 1893.

Watch Out for Those Half Mains

If your water system uses pipes that are 50 years old or more, you may be using only half a main, instead of a full one. This was explained by W. D. Hudson, vice president of Pitometer Associates, at the recent meeting of the Indiana Section, AWWA.

Older mains have interiors that are coated with tar instead of cement mortar. This eventually breaks down, permitting the water to corrode the bare metal. The resulting corrosion or tuberculation reduces the carrying capacity of the pipe as much as 50% or more. Low pressures in many old systems may often be attributed to inefficient water pipe.

A new cement-lined pipe, Mr. Hudson reported, if well laid, will have a Hazen-Williams flow coefficient of 140, and will retain this indefinitely. A 12-inch main with a coefficient of 140 will carry water at the rate of 1,500,000 gallons daily with a loss of pressure of about one pound per square inch per 1,000 feet of pipe. To force this volume of water through a pipe of the same size with a coefficient of only 70 would mean a loss of pressure of about 3.8 pounds per square inch per 1,000 feet of pipe. Since the loss of pressure is the measure of the cost of pumping, it costs nearly four times as much to pump water through a main with the lower coefficient.

Leakage in the water system is another weakness that should be detected, Mr. Hudson said. A system performs well if one can account for 85% to 90% of the water pumped by flow through the meters. This assumes that every water service has a meter, including schools, public buildings, and charitable institutions that normally receive water without charge. If these do not have meters, you can consider the system good when you account for 83% to 88%. If use of water in the filter plant is unmetered, you can be satisfied if you account for 81% to 86% through customers' meters.

If one cannot account for this amount of water through the meters, a leakage survey is in order. Leakage, Mr. Hudson emphasized, not only wastes pumping power and water-treating chemicals, but also robs the system of efficiency. It cannot be eliminated entirely, but it can be brought under control. ◄

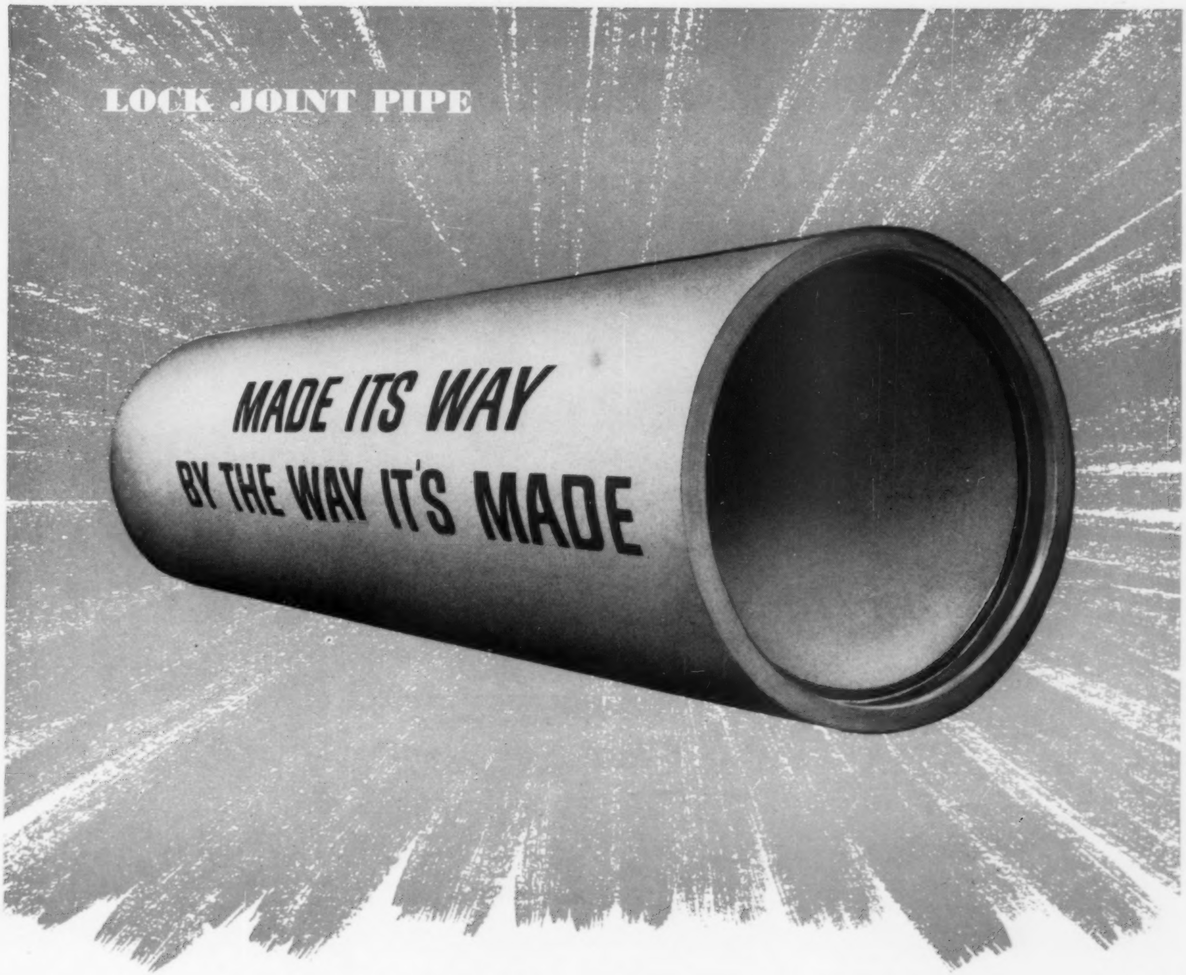
Chicago's Top Year for Waterworks Construction

Chicago will spend $45,000,000 in 1960 for water construction, making this year the biggest in city history, according to Water Commissioner James W. Jardine. The program includes $27,900,000 for filtration-plant construction, $8,500,000 for pumping stations and tunnels and $8,600,000 for water mains.

The current year is the second in the city's 5-year plan. The plan calls for expenditure of $128,300,000 for Chicago and 58 suburbs. The filter-plant allocation is earmarked for the Central District plant now under construction.

The allocation for pumping stations and tunnels will be spent to modernize the city's ten existing stations and to erect the Southwest Station. The new station will provide an initial capacity of 175,000,000 gpd, with future expansion to 275,000,000 planned.

The program is financed by the sale of water-works certificates that are repaid from water sales. ◄◄



Lock Joint Concrete Pipe's unexcelled record for durability, efficiency and maintenance-free service is no accident. It is the product of skilled design, meticulous choice of materials and painstaking workmanship.

Lock Joint's well-tested, conservative steel reinforcing design produces pipe of unusual strength and safety. Carefully analyzed select materials, expertly combined by experienced craftsmen, assure unusual durability and permanent high flow characteristics. The watertight, flexible Rubber & Steel Joint permits rapid, economical installation and immediate backfill.

So, when considering materials for water transmission and distribution mains or sewer or culvert lines, make certain to weigh the merits of the pipe that *made its way by the way it's made* — LOCK JOINT CONCRETE PIPE.

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BY THE WAY IT'S MADE
CONCRETE PIPE

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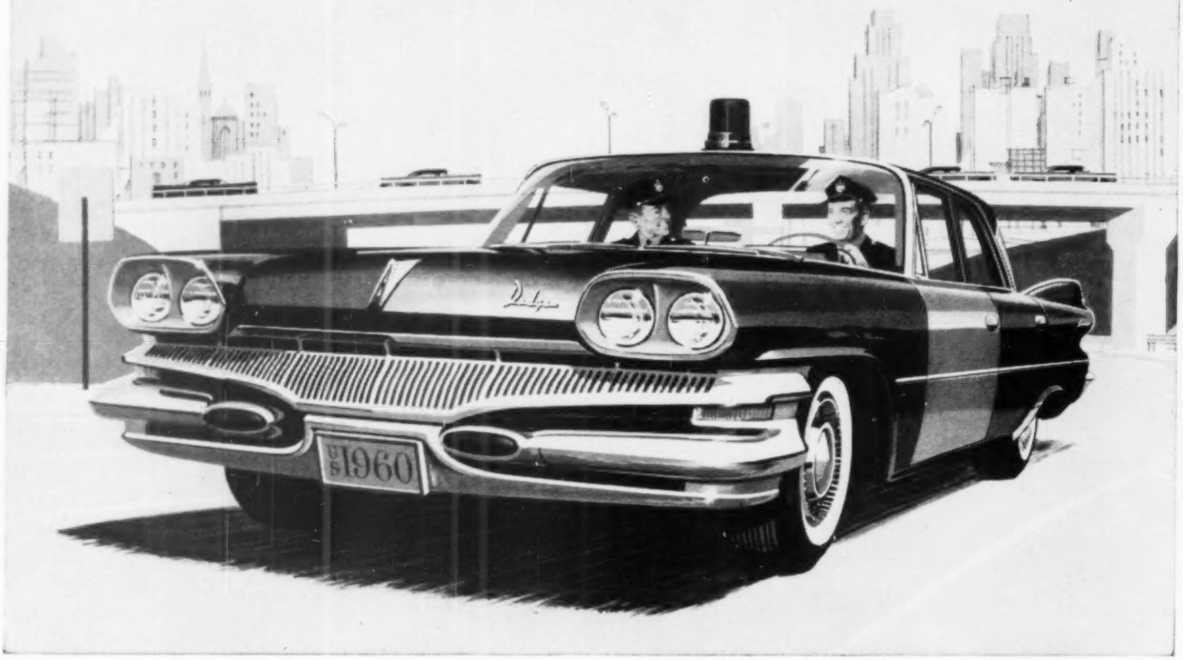
Question: Why have law enforcement officials in 17 states and 203 cities made the switch to the new Dodge Dart?



Answer: They like the sure, secure way Dart handles and corners. They like Dart's roomy, made-for-comfort interiors. They like Dart's potent Super Red Ram V-8 and its new penny-pinching Economy Slant "6". They like its solid, one-piece Unibody construction—squeak-free, rattle-free, rustproofed. Most of all, they like Dart's remarkably low price. It costs no more than other low-priced cars.

For complete details and specifications, see your nearest Dodge Dealer or write for free Dart Pursuit Brochure: Advertising Department, Box 1259-D, Dodge Division, Chrysler Corporation, Detroit, Michigan.

DODGE DART

POLICE PURSUITS FOR 1960

SHERIFF OF POLK COUNTY
SARASOTA CO. SHERIFF'S DEPT.
MANATEE CO. SHERIFF

Sheriffs Hagan Parrish of Polk County, Ross Boyer of Sarasota County and Roy Baden of Manatee County with their new outboard motorboats.

Lake Rescues in Polk County, Fla.

The east border of the county is a large body of water known as the Kissimmee River which arises near the City of Kissimmee and proceeds south into Lake Okeechobee. Approximately 60 miles of this river borders our county. Inland, the county has several hundred lakes.

For rescue safety work on all waterways of Polk County we have a Texas Maid Fiesta 16-foot aluminum boat powered by a Mark 78 Mercury outboard motor. This unit is used on these lakes for general law enforcement purposes. I find it the most practical unit because of its durability and high speed.

I use a Gator trailer and one man launches or loads the 16-foot craft. As to maneuverability of the unit, by bringing the motor to low throttle I find it very practical for dragging operation in recovering bodies from the lake bottoms. I plan shortly to add to this department five additional units, so that one will be more accessible to each area of the county for quick response to a rescue call.

I have four men highly trained in skin-diving and rescue work. We are presently taking advantage of the generous offers of the various fire departments over the county who have rescue equipment, all of which are of the outboard type.

HAGAN PARRISH
Sheriff, Polk County
Bartow, Fla.

Better Policing of Waco, Tex.

The Police Department of Waco, Tex., was able to return foot patrolmen to their beats by adding a selective signaling system to its two-way mobile radio communications network.

When it looked as if the department was going to be forced to pull the patrolmen off their beats, the citizens of Waco flooded the department with complaints. A user of two-way radio for 20 years, the department added the Motorola "Quik Call" selective signaling system and was able not only to leave the patrolmen on their beats, but also to give them an automobile to use. Quik Call signals the patrolman that he is wanted on the radio, should he leave his vehicle to walk his beat.

The Quik Call signal blows the horn of the vehicle three times during the day, and cuts in the rotating red beacon on top of the vehicle at night. There is a switch on the dashboard for operation by day or night.

Being able to patrol Waco streets on foot and in cars has brought the citizens greater protection. The officers make wide security checks simply by parking their car and covering the area. With the selective signaling system, they are able to remain in service for emergency calls.

The new feature is tied in with the department's two-way mobile radio system, which consists of a 60-watt primary base station with three remote consoles; a 60-watt auxiliary base located at the dispatcher's desk; 38 mobile units in cars; and two mobiles in three-wheel Harley-Davidson motorcycles. Two Handie Talkie radiophones are used for setting up communications away from vehicles.

J. V. GUNTERMAN
Chief of Police

OUR MUNICIPAL NOTEBOOK

INDUSTRIAL ZONING

. . . makes better sense if it is based on performance standards rather than an arbitrary classification of industry by types, according to Edmond M. Loewe of the Columbus, Ohio, city planning commission. Industrial performance standards place specific limitations on the external effects of industries that create nuisances. They govern such factors as air pollution, noise, glare, heat and vibration.

* * *

CHILDREN ENJOY THEMSELVES MOST

. . . in play areas with trees and foliage; where they have space, and freedom to move; where there are hills or varied terrain; where they can watch big transportation vehicles, trucks, buses, trains.

* * *

IF YOU WORRY ABOUT CORROSION

. . . of aluminum lighting standards, particularly in seacoast areas, Chester M. Kirsop, city electrician, Olympia, Wash., can assure you that you are worrying needlessly. A few years ago, he supervised installation of 334 new lighting units, using Hubbard Aluminum Products aluminum standards. Most have transformer bases of Alcoa alloy T356T6. The poles and arms were fabricated from Alcoa alloy 63ST6. He selected the aluminum because of its resistance to corrosion, its toughness, and ease of installation. Not only have they *not* corroded, but Police Chief Roy L. Kelly has observed that the improved lighting has produced a marked decrease in accidents.

* * *

CITY RECORDS TOO BULKY?

Philadelphia, at one time, had 1½ *miles* of record books, dating back to pre-Colonial days. Today these have all been microfilmed and now occupy less than 1% of the space previously required. The work was done under the direction of Clarence A. Dockens, Deputy Commissioner of Records.

* * *

A GOOD SICK LEAVE POLICY?

Culver City, Calif., made a thorough study of sick-leave practices in developing a policy of its own. In essence, it runs as follows:

- 12 *days' annual accumulation*
- 72 *days' maximum accumulation*
- *one-third of sick leave in excess of the 72-day maximum may be added to the employee's annual vacation.*

The Culver City study embraced 80 cities across the nation, ranging in population from over 1,000,000 to less than 10,000. It also included two federal agencies.

* * *

SANITARY FILL BENEFITS

. . . include everything from ball fields to cotton patches in Waterloo, Iowa. However, Street Commissioner Carl Fagerlind, in charge of the work, also has utilized his city's refuse to build sturdy river levees and create new industrial sites. A Caterpillar D7 tractor spreads and compacts the refuse, and then covers it each day with two to three feet of earth.

The cotton patch was a school project designed to allow young Waterlooites to see how it grows.

* * *

FOR TRICKY STREET LIGHTS

. . . you might try some variation of the Palm Springs, Calif., system. The city has 700 incandescent lamps installed on palm trees along its 1¼-mile business street. The palms are at 60-foot intervals. Each has two 150-watt lamps located just below the palm fronds. Crosswalks get special illumination from two 300-watt spotlights.

If you want more information on these topics, or any other municipal problems, drop a note to:

The Editors
THE AMERICAN CITY
470 Park Avenue South
New York 16, New York

STOP SIGNS DAMAGED?

If so, you can take a tip from Joseph Kotsmith, Benton County Engineer, Foley, Minn., and replace them in three minutes flat. One man can take a load of 30 "Ez-On" sign faces and simply snap them over the old, damaged signs, making them as good as new. He reports that they cost only half as much as ordinary signs, save unnecessary hauling back and forth to the maintenance shop, and are easy to handle. The "Ez-On" signs are a product of the Grace Sign and Mfg. Co., St. Louis 18, Mo.

* * *

CLEAN CATCH BASINS

. . . at least three times each year, and some of them more frequently, recommends Superintendent John J. O'Brien, Englewood, N. J. He assigns one crew to do this work. The crew has a GMC truck with an Anderson Engineering hydraulic crane connected to a Hayward orange-peel bucket.

* * *

POOR TELEVISION RECEPTION?

Not at Truth or Consequences, N. Mex., even though it is 150 miles south of Albuquerque and 120 miles north of El Paso. This little city installed an Adler Electronics translator that can pick up these distant stations and rebroadcast their signals. Municipal electric utility funds made the improvement possible.

* * *

ODOR-FREE REFUSE TRUCKS

. . . is simply a matter of cleanliness, says Incinerator Superintendent Joseph Coffee of Hartford, Conn. Each day, from April through November, every refuse truck is sprayed clean of all solids and refuse. One man can clean a truck in four minutes by using a handgun and hose connected to a Malsbary Model 250 steam cleaner. This applies water at about 120 psi and 200°F. ◄◄

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Easiest to install of all stack venting!

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KRALASTIC® venting is the easiest to install of piping. It is light in weight—one man can lift and connect a length where, with ferrous metal, it would take more time and more men. No heavy equipment for threading or caulking. Can't rust, can't corrode. Diameters up to 6 inches.

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Philadelphia's Water Commissioner Samuel S. Baxter, accompanied by reporters and photographers, makes the final acceptance inspection of a $1⅓-million link in the city's main relief sewer project.

Motorized Sewer Inspection

Water Commissioner Samuel S. Baxter utilized a jeep to make the final acceptance inspection of one of Philadelphia's newest and mightiest storm sewers. The new tube, 13 feet inside diameter and 1,300 feet long, was blasted from solid rock 90 feet underground.

Inside the tunnel (16 feet in diameter before concreting) construction crews poured the concrete invert, then placed the steel frame for the arch and usd a Schwinn Concrete Placer to blow in the concrete on the arch. This steel frame was moved daily. The D. and C. Spinosa Company of Allentown, Pa., started the tunnel on June 3, 1958 under a $1,338,747 contract.

The new section is part of the $9-million Main Relief Sewer program designed to drain a large area of north central Philadelphia. The sewer project, with scheduled diameters ranging from 10 feet to 16 feet, was started almost 30 years ago. Additional sections are to be built, with work already begun on one to cost about $900,000 and take over a year to complete. ◄◄

Grease from Garbage Grinders Not Significant in Wichita

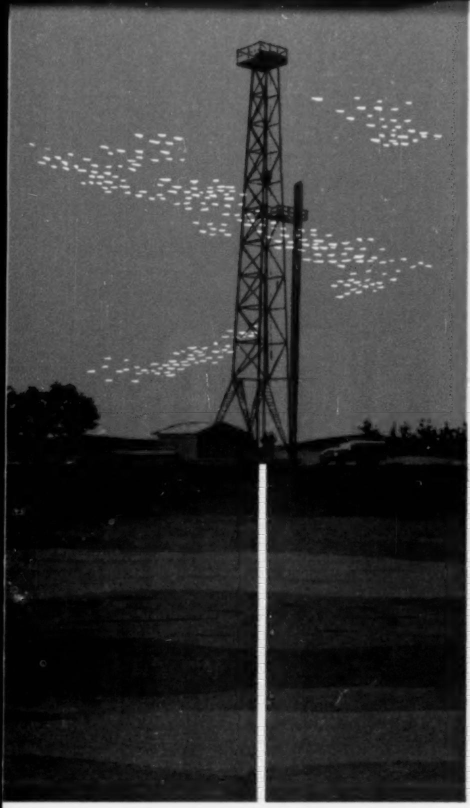
While grease in sewage always has been a problem at the Wichita, Kan., sewage purification plant, it is not one that can be attributed to the 20,000 kitchen garbage grinders in use in that city. This is the conclusion of V. W. Pickering, acting superintendent of sewage treatment, rebutting a statement from Purdue University that grinders contribute to sewage grease, similar to packing-plant wastes.

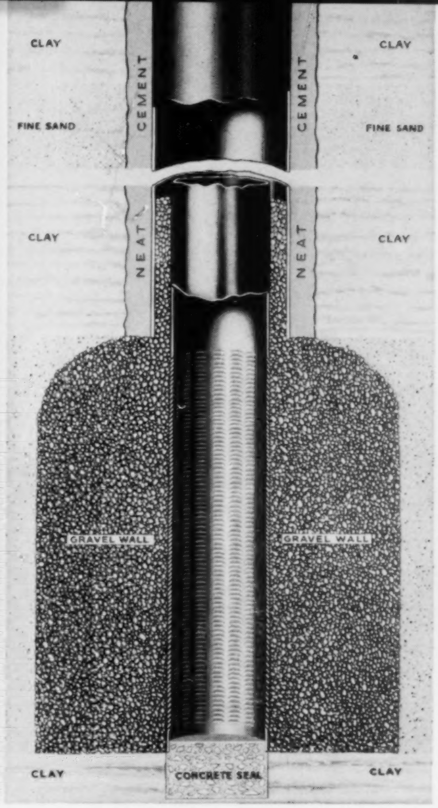
A study by Black and Veatch, Kansas City consulting engineers, shows that the grinders contribute a polluting load to the sewage estimated at from 5,000 to 6,000 pounds of BOD per day. Wichita's industries, in contrast, contribute from 10,000 to 20,000 pounds per day, or from two to four times the grinder load. While grease always has been a problem at the plant, the rise of grinders has not been accompanied by any significant increase in the amount of grease in the sewage. Thus, Mr. Pickering concludes that the greatest volume of grease comes from the meat-packing industries.

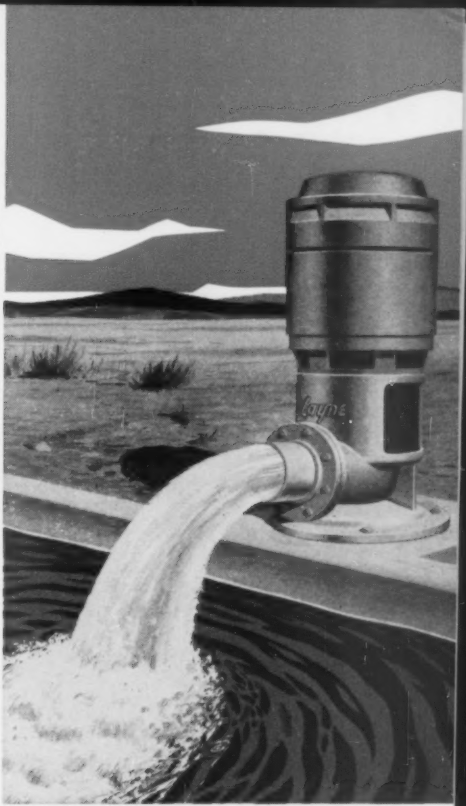
Originally, the operators flushed the grease into a nearby pond and burned it. Later, they tried to pump it into the digesters but found themselves continually facing clogged lines. In 1954, the plant was provided with facilities to collect the grease in a pit and mix it with primary sludge so that it could be pumped into the digesters. This has proved successful.

The grease is mixed with the sludge by discharging compressed air into the mixture, at 70 psi, through an open ¾-inch pipe in the bottom of the mixing pit. The operators must leave the air on, during pumping, to prevent separation of the grease and sludge. The sludge pumps can transfer this mixture through the pipes just as they do primary sludge. Nevertheless, the line requires steam-cleaning every four or five months. The digesters, equipped with Pearth gas recirculation equipment to keep the grease mixed with the sludge, can digest the grease effectively.

Mr. Pickering reports some difficulty with grease carrying under the baffles in the settling basins. However, he has been able to correct this by extending the baffles downward. He also has had some difficulty with grease that works its way into the nozzles of the trickling filters. However, this also can be corrected by changes in grease-skimming methods in the primary tanks. ◄◄







WATER WATER WATER

With A Layne Drilled Well Layne knows where the water-bearing formations are located. They have been drilling wells for over 75 years. This experience comes from searching and researching water aquifers. Knowing *where* to drill is half of the success—knowing *how* is the other half. In drilling a straight well experience counts—and you can count on Layne. Layne specializes in water well drilling. To get a good start for a water supply—you need a good well. You get a good, producing well when you specify a Layne drilled well. *Bulletin No. 100*

With A Layne Gravel Wall Well This technique and resulting arrangement of the new 134 Shutter Screen and gravel (shown here) permits the free flow of water into the well and affords the following advantages: larger shutter screen openings, reduced friction, reduced draw down and pumping head—thereby reducing pumping costs, increased specific capacity and more effective retention of native sands. Cemented wells are installed if indicated, and result in greater purity of supply as well as increased life of the well. *Bulletin No. 900*

With A Layne Vertical Turbine Pump Whatever the pumping requirement, there's a Layne pump to meet any pumping conditions. Layne Vertical Turbine Pumps come in a wide range of sizes and capacities, delivering 30 to 20,000 GPM and requiring from 4 to 42 inch well casings. The complete line of Layne Pumps include: Deep Well Vertical Turbine (oil or water lubricated), Short Coupled Vertical Turbine, Propeller, Mixed Flow, Fire Pumps and Volatile Liquids Pumps, Regular and "In-Line" Submersible. *Bulletins No. 200 (oil) 201 (water)*

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Available in sizes 2 to 8 inches, lengths 5, 8, and 10 feet for faster installation. Also in Perforated for septic tank beds, and land and foundation drainage

This L-M Permaline 50-Year Guarantee Protects You, and Your Customers

by **W. M. BLOOM**
Product Manager, Fibre Products
Line Material Industries

L-M Permaline Bituminous Fibre Pipe is a product of outstanding quality. Here is a time-tested fibre pipe of *proved* excellence.

Millions of feet of fibre pipe are now installed, and have been in service for years and years. Thousands of wholesalers, plumbers, builders, and home-owners are now enjoying the benefits of the excellent quality of L-M Permaline Pipe.

Because of this long-lived, dependable quality, we are now guaranteeing L-M Permaline Fibre Pipe and fittings for 50 years—when properly installed in a house-to-street sewer. This guarantee is backed by the 50-year reputation of Line Material, and by the vast resources of the McGraw-Edison Company.

This guarantee has been made possible only because of the loyal and able cooperation of the competent plumbers who have made certain that Permaline Fibre Pipe was properly installed.

This 50-Year Permaline Guarantee Provides:

A written guarantee to the home-owner of product quality and performance.

If at any time within 50 years of installation the pipe should fail, Line Material will make full payment of material and labor costs incurred in the repair of a legitimate claim.

The requirements for the guarantee are simple. At time of installation the contractor or builder must fill out a guarantee application form indicating the location and to whom the guarantee is to be issued.

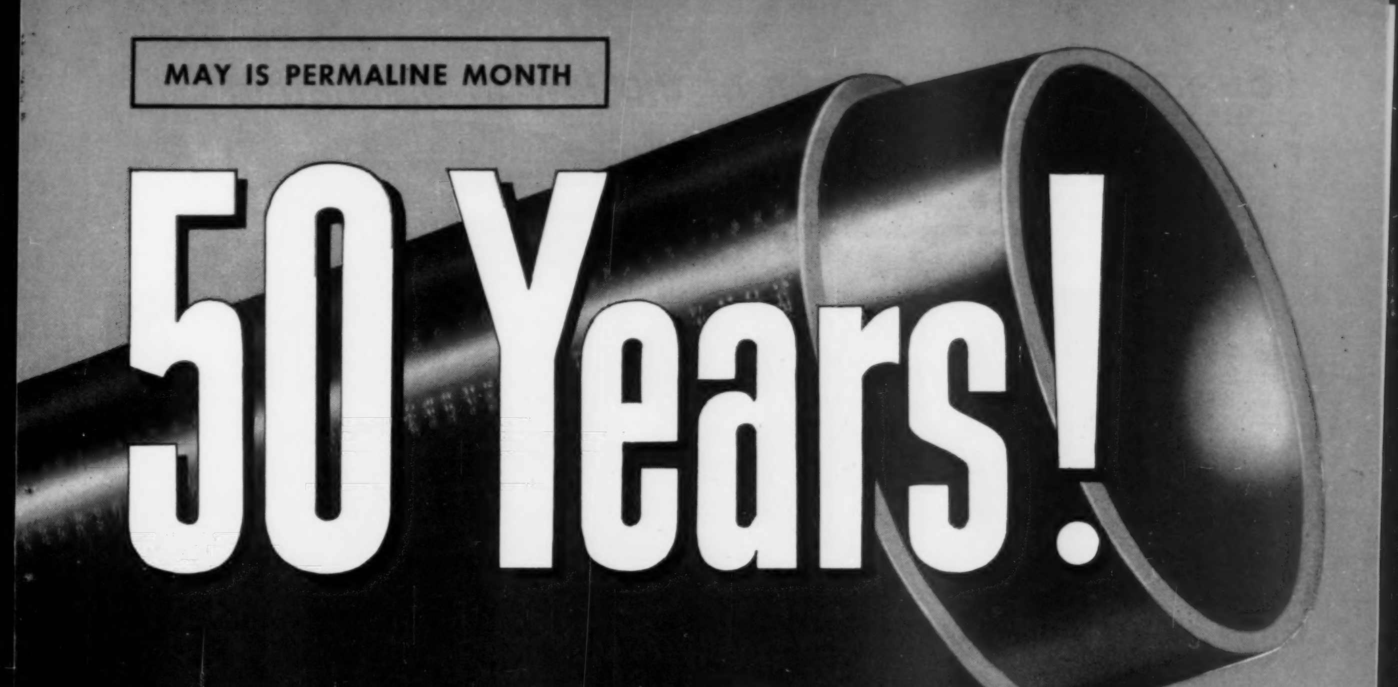
The installation must be made by competent craftsmen, in a workmanlike manner, in accordance with the installation recommendations from the ASA Plumbing Code A40.8-1955, and must be approved by the plumbing inspector as conforming to the local code.

For complete details contact your L-M Fibre Pipe Wholesaler or Line Material Industries, Milwaukee 1, Wisconsin.

LINE MATERIAL® Industries
McGRAW-EDISON COMPANY

Permaline Pipe and Fittings for Better

MAY IS PERMALINE MONTH



50 Years!

L-M PERMALINE HOUSE-TO-STREET SEWER

50 Year Guarantee

By this Certificate Line Material Industries guarantees as follows:

Address of installation

Name of installing Company

LINE MATERIAL INDUSTRIES

McGRAW-EDISON COMPANY

MILWAUKEE, WISCONSIN

NOTE: This is an important legal document. Keep in safe place with other valuable papers.

WE CAN MAKE THIS OUTSTANDING 50-YEAR GUARANTEE, BECAUSE:

1. Material and Workmanship of L-M Permaline Fibre Pipe and fittings are of highest quality
2. Joints of L-M Permaline Fibre Pipe and factory-machined tapered fittings will not leak when properly installed
3. Joints of L-M Permaline Fibre Pipe and fittings are root-proof
4. L-M Permaline Pipe and fittings are not damaged by temperatures normally encountered in sanitary systems
5. Ground movement will not fracture L-M Permaline Fibre Pipe or fittings
6. Earth and surface loads commonly encountered in domestic sanitary systems will not crush L-M Permaline Pipe and fittings
7. L-M Permaline Pipe and fittings are not affected by bacteria or micro-organisms
8. L-M Permaline Pipe and fittings will not deteriorate under the influence of water, household wastes, detergents, domestic drain cleaners, or soil acids or alkalis
9. L-M Permaline Pipe and fittings are not affected by electrolysis, galvanic corrosion, or tuberculation
10. Cinder backfill will not corrode L-M Permaline Pipe or fittings
11. L-M Permaline Pipe and fittings will not crack or shatter from normal handling during installation

McGRAW EDISON

Sewers and Drains

Mail this Coupon

LINE MATERIAL INDUSTRIES, Fibre Products Division AC-50
Milwaukee 1, Wisconsin.

Please send me information on L-M Permaline Pipe and the 50-Year Guarantee.

Name______________________________

Title______________________________

Company______________________________

Address______________________________

City____________________ State__________

Type of Business:

☐ Plumbing Wholesaler
☐ Plumbing Contractor
☐ Consulting Engineer
☐ Architect
☐ Builder
☐ Other__________

Stretching the long arm of the law in Manhattan

New York, N. Y. — The nation's first city boasts one of the nation's finest police forces. And part of this well-coordinated department is a mobile task force of 144 officers mounted on Harley-Davidson Solos.

Premier protection for a prominent visitor

...New York's finest on Harley-Davidson Solos

Maximum Security — American Style — Soviet Premier Khrushchev was well protected on his recent arrival in New York City. Alert members of the New York Police Dept. on Harley-Davidson Solos were an important part of security measures. Long experience has proven that only Solo-mounted officers keep things moving smoothly at parades and civic functions. Perfect visibility backed by swift mobility minimizes "security risks."

Modern police departments everywhere — large and small — are making the Harley-Davidson mounted officer the spearhead of their law enforcement. It's a logical choice, for only the Solo can give you truly flexible action — in emergencies . . . criminal apprehension . . . spot traffic control. For a closer look at law enforcement the Solo way, call your Harley-Davidson dealer or write Harley-Davidson Motor Co., Milwaukee 1, Wisconsin, for new brochure.

HARLEY-DAVIDSON
Police Motorcycles

Phoenix Trains City Administrators

Phoenix, Ariz., has announced the 11th year of its administrative internship program. Three internships will be open on July 1, 1960, and each will last for a 12-month period.

The city will fill these vacancies with young men who wish to train themselves for careers in city management and who are qualified by previous training and temperament to succeed in this field. Candidates must have completed all required courses for a Master's Degree in Government Management, Public Administration, Business Administration, Engineering or similar curricula. The interns selected each will receive $350 per month.

Interns are assigned to the Division of Research and Budget in the Finance Department. Permanent administrative analysts assigned to the division help to guide the work of the interns. The city manager takes a close personal interest in them.

The interns attend all staff meetings and make frequent contacts with the various department and division heads in the city government. Their work involves research studies in government, administrative procedures, work methods, and other special problems. They fill in during vacations in the manager's office, and perform other work. They also participate in long-range planning, administrative reporting, budget preparation, and other management functions. The experience provides an excellent transition from classroom work to actual assumption of managerial responsibilities.

During the ten years the program has been in operation graduate schools of the following universities have been represented: Arizona State; Brigham Young (Provo, Utah); California (U.C. L.A.); Colorado; Cornell; Denver; Florida; Kansas; Minnesota; Pennsylvania; Southern California; Texas; Washington; and Wayne (Detroit).

Of the 29 men who have already completed their internships, ten are now city or county managers, nine are administrative assistants, and two are municipal finance directors. Two are in military service, two are with the federal government, one is a teacher and one is an administrative analyst in a large city. Only two of the 29 have departed from the field of government to go into private industry. ◄◄

Air Pollution Control Notes

Four-Year Extension

A four-year extension of the $5,000,000-a-year Federal Air Pollution Control Program will begin when the current program ends on June 30, 1960.

Damage to Crops

The Bergen County (New Jersey) Board of Agriculture reported recently that air pollution is causing severe damage to agricultural and horticultural crops in the area. Among the crops damaged are chickory, escarole, scallions, dandelions, sour grass, spinach, bedding plants and petunias. The report called for regular policing of garbage dumps and other waste disposal areas to end open burning, one of the sources of pollution.

Nashville to Report

Results of a year-long, $250,000 study of air pollution in Nashville, Tenn., should be made known sometime this year, it was announced by the United States Public Health Service, which completed sampling recently. Sampling started in January 1958, under the co-sponsorship of the Tennessee Department of Public Health and the City-County Health Department.

New Regulations

The City-County Air Pollution Control Board of Louisville, Ky., has approved three new regulations, as a result of a two-year, $30,000 study of air pollution. The regulations require oil companies to install devices to control escape of gas vapors from gasoline-storage tanks, limit the emission of dust permitted from manufacturing processes to 1% of the weight of the dry materials used, and further limit the amount of fly ash emitted into the air from large boilers.

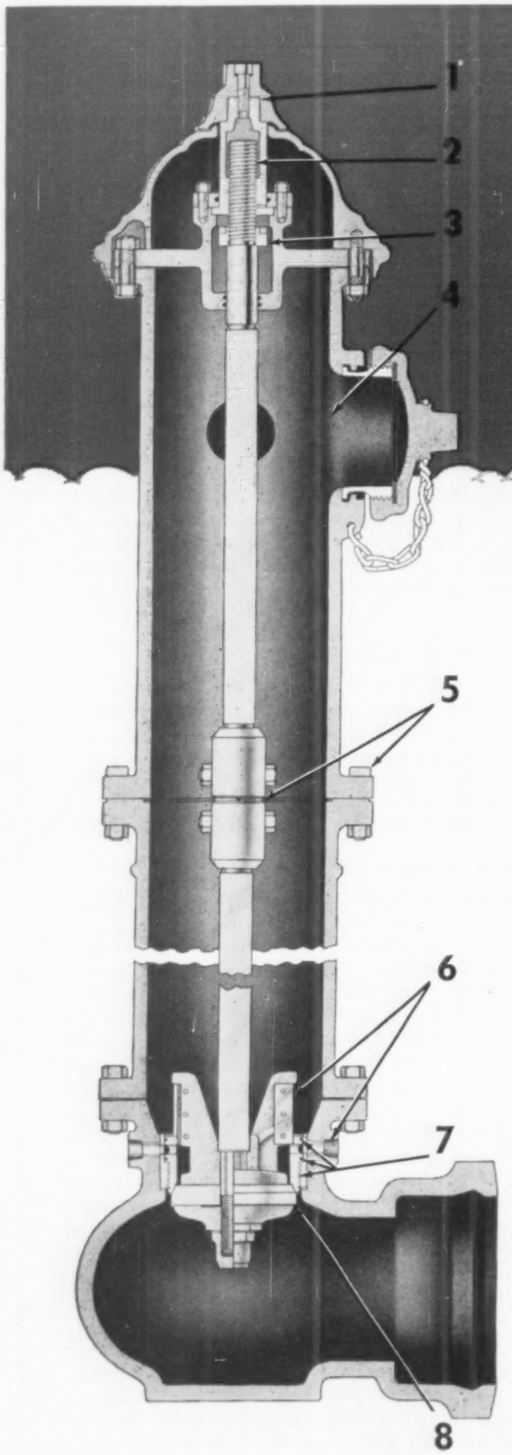
New York Study

A one-year exploratory study of the relationship between climate, air pollution, illness and mortality in New York City is being conducted jointly by the Department of Air Pollution Control and the Department of Health. Dr. Franklyn Field and Dr. Leonard Nierenberg are making the study under the direction of Dr. Leonard Greenburg, former Commissioner of Air Pollution Control. The United States Public Health Service has awarded a grant of $41,540.50 for the project. The study is scheduled for completion in June 1960. Investigation will be made of the possible association between the frequency of human deaths from external and other causes and variations in air climatological conditions and air pollution. Preliminary investigations will be made to develop and test methods best suited for studies of this kind; to compare the frequency of homicides, suicides and accidental deaths in New York City with climatic conditions preceding such fatal episodes, and to explore the possible effects of abrupt climatological changes of peaks in air pollution in precipitating deaths in persons affected with severe cardiac or pulmonary ailments.

Leaf Fires

Leaf fires can cause great damage to trees, it was reported recently by Dr. P. P. Pirone, plant pathologist at the New York Botanical Garden. Speaking at the annual meeting of the National Shade Tree Conference in Detroit, Dr. Pirone said: "Of 12 London planes *(Platanus acerifolia)* studied, six were found to have died from the fungus *Ceratocystis fimbriata f. platani.* Three others were being or had been killed by the fungus *Botryosphaeria ribis.* In nearly every instance leaf fires beneath the trees seemed to have been associated with the infections." Dr. Pirone said such damage should decrease as a result of restrictions on open burning.

—Prepared by Kenneth Kowald



AS
ADVANCED
AS
TOMORROW...

NEW!

SMITH
MODEL H100
HYDRANT **proudly joins the time-proven Smith product line. No other hydrant has A L L these features:**

1. **OPERATING NUT:** weatherproof and tamperproof.
2. **OPERATING MECHANISM:** sealed with "O" Rings, operating threads and bearing surfaces permanently lubricated.
3. **TRAVEL STOP NUT:** prevents bending rod if operating torque is excessive.
4. **MAXIMUM DELIVERY:** streamlined openings and large standpipe area reduce friction to minimum.
5. **SAFETY CONSTRUCTION:** if struck forceably, rod coupling and the frangible bolts break cleanly preventing standpipe damage. Groundline flanges permit rotating nozzles to desired position.
6. **POSITIVE DRAINAGE:** corrosion-proof multiport drain mechanism operates automatically. Drain ports momentarily flushed each time hydrant is operated.
7. **VALVE ASSEMBLY:** bronze-to-bronze thread engagement and self-sealing "O" Ring Valve construction permits easy removal of internal parts through standpipe using compact lightweight wrench.
8. **COMPRESSION VALVE:** closes with the pressure — flooding cannot occur under impact.

These and many other important operating and maintenance features are detailed in Bulletin H100 — available on request.

HYDRANTS — VALVES
THE A.P. SMITH MFG CO.
SINCE 1896
EAST ORANGE NEW JERSEY

This graceful-looking prestressed concrete bridge represents an important economy to Cleveland.

Precast, Prestressed Park Bridge

The Cleveland Metropolitan Park District made a $40,000 savings in bridge construction by building a 210-foot bridge to precast, prestressed design, the first such bridge ever built in the Cleveland area.

The design and estimated cost studies of several types by the district's consulting engineers indicated that such a design was appropriate for a park bridge at the location required. The bridge has three spans, a roadway of 28 feet and a 5-foot sidewalk on each side, with steel railings.

Each of the three spans consists of 18 T-shaped beams, 3 feet deep, 2 feet wide and 70½ feet long, placed side by side on neoprene bearing plates. Each beam is reinforced with 33 high-tensile steel wires, ¼ inch in diameter, assembled and encased in three units of 11 wires each. The wires were post-tensioned to a working stress of 144,000 psi. Each beam weighs 19 tons. One-inch steel dowels anchor the beams to the piers and abutments.

Because of the difficulty of transporting the precast beams from a casting plant to the bridge site, a beam-casting yard was set up approximately 200 feet from the bridge site. Casting proceeded at a rate of two beams a day, using concrete able to develop 28-day compressive strength of 5,000 psi. The designers permitted post-tensioning when the concrete had attained a strength of 4,000 psi.

The complete structure, exclusive of approaches and roadway wearing surface, was constructed at the contract bid price of $134,666. The cost per square foot of bridge was $16.80.

The Osborn Engineering Company, Cleveland, designed the bridge and supervised construction.

The general contractor was the Brodess Construction Company. The George Rackle and Sons Company cast, stressed and placed the beams in forms designed by the Intrusion Prepakt Co., Inc. Both firms are located in Cleveland.

H. W. GROTH
Director

Two Thousand Skaters Per Rink

Two of the nation's largest artificial ice rinks will revive the popular winter sport of ice skating for thousands in Western Pennsylvania. One will be in each of two Allegheny County public parks near Pittsburgh.

Both the North Park and the South Park rinks, slated for completion in October, are being constructed under the supervision of the Allegheny County Department of Parks. The North Park rink provides a skating area of 120 feet by 208 feet or roughly 2½ times the size of the average hockey rink.

Both rinks are the permanent type. They utilize wrought-iron brine piping permanently embedded in a concrete slab which is surfaced with terrazzo. The North Park rink employs approximately 76,200 feet of 1¼-inch Byers 4-D wrought-iron pipe spaced on 4-inch centers. Larger wrought-iron pipe (6, 8, 10 inches in diameter) was installed for supply and return lines.

The open-air rink is operated with 280 tons of refrigeration. A 1.22 calcium chloride solution is circulated through the pipe runs. The ice-freezing brine is pumped from a tank in the refrigeration room of the clubhouse building.

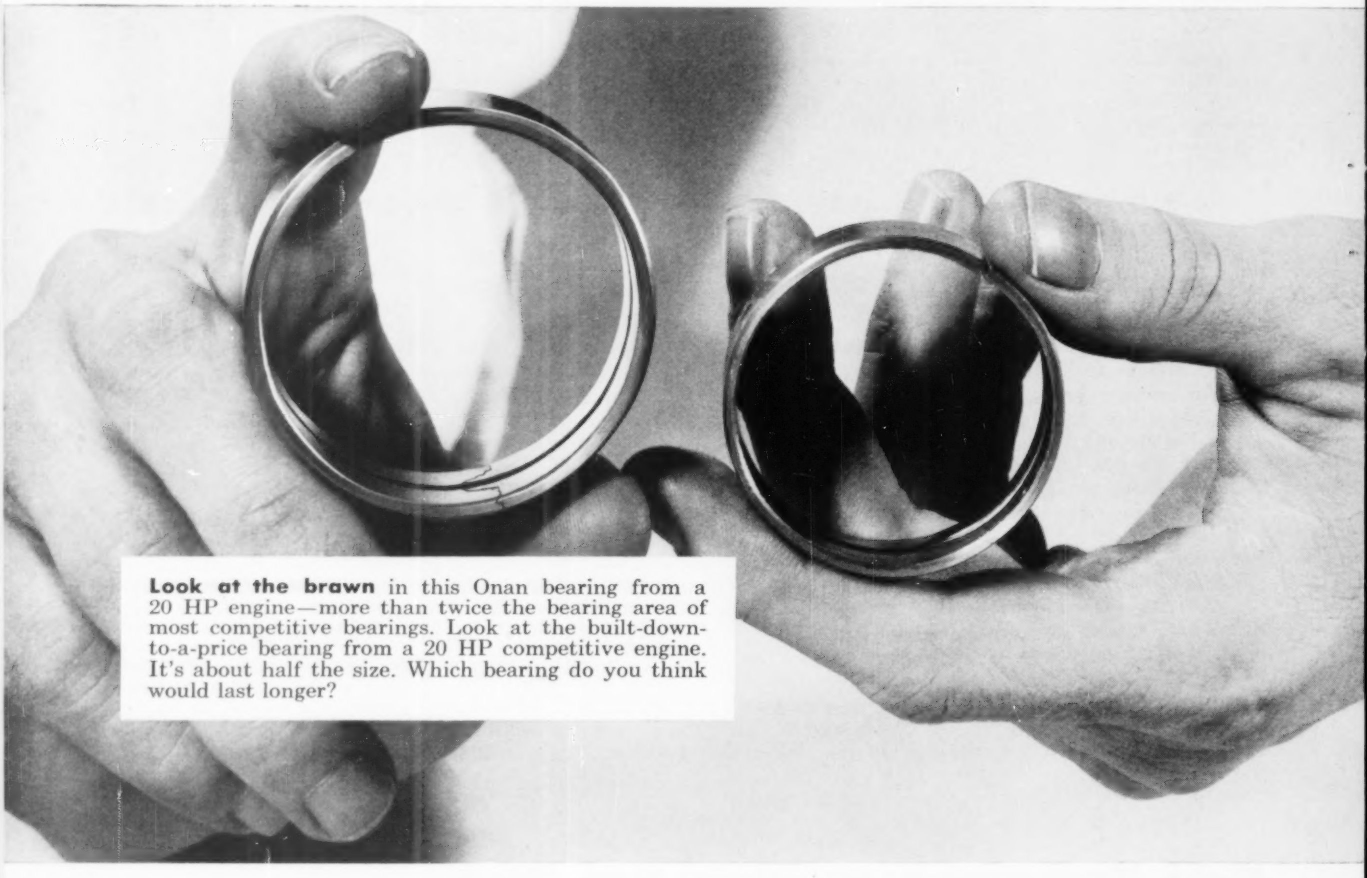
County officials estimate attendance at the North Park rink during an average season as 120,000 with most skating on week-day evenings and on weekends. The rink should comfortably accommodate approximately 2,000 at one time.

The rink's principal operating cost will be for labor and for power consumed by the refrigerant equipment.

Adjoining the new rink will be a $500,000 clubhouse with restaurant facilities and a spectators' house. Skate rental fees will be nominal. Similar construction is planned for the South Park rink.

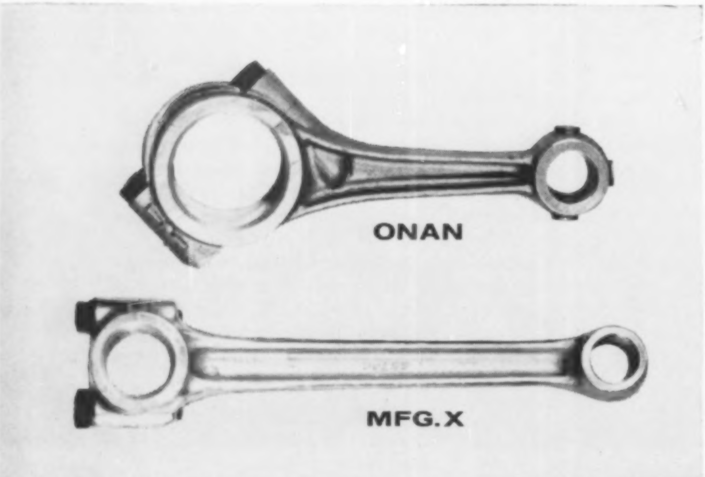
The rink piping was installed by the Mollenberg-Betz Machine Company, Buffalo, which also installed the refrigerant equipment. The A. M. Byers Company of Pittsburgh suplied the 4-D wrought-iron pipe. ◄◄

Big, beefy bearings make than ordinary

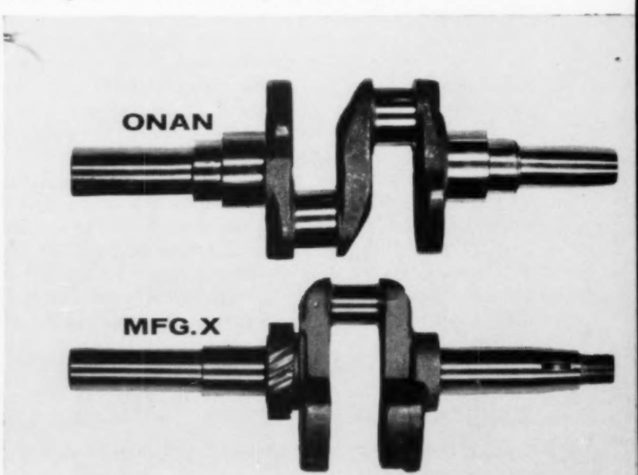


Look at the brawn in this Onan bearing from a 20 HP engine—more than twice the bearing area of most competitive bearings. Look at the built-down-to-a-price bearing from a 20 HP competitive engine. It's about half the size. Which bearing do you think would last longer?

Connecting rods—The shorter stroke of the Onan engine permits the use of a shorter rod, a more rugged design that stands up longer under heavy duty service—another example how Onan builds *up* to performance, not down to a price.



Crankshafts—Larger diameters of main and rod journals make Onan crankshafts stiffer and stronger, minimizing the possibility of breakage or bending. More "muscle" throughout Onan engines means longer life, extra years of full-rated performance.



Onan last years longer electric plants

Onan bearings are about twice the size of most competitive bearings

Bearings take a beating in any engine. But, with Onan's bigger bearings the strain is spread over a wider area, giving you longer, more economical engine life.

This is just one example of the extra quality you find in Onan Electric Plants. Each one is checked out at full load for hours before it goes to the shipping dock. Engineers have designed 134 separate tests to make sure it operates the way it is supposed to. Not only that, inspectors from independent laboratories pay surprise visits to the Onan factory, pull units off the line and put them through their paces. It's a double check—on Onan tests and testing methods.

There's an Onan representative near you, ready to tell you about the complete line of Onan Plants, from 500 watts to 230,000 watts. Look for his name in the telephone classified section in all major cities, or write direct.

ONLY ONAN GIVES YOU THIS GUARANTEE

PERFORMANCE CERTIFIED

We guarantee that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.

D. W. ONAN & SONS INC.
Minneapolis 14, Minnesota

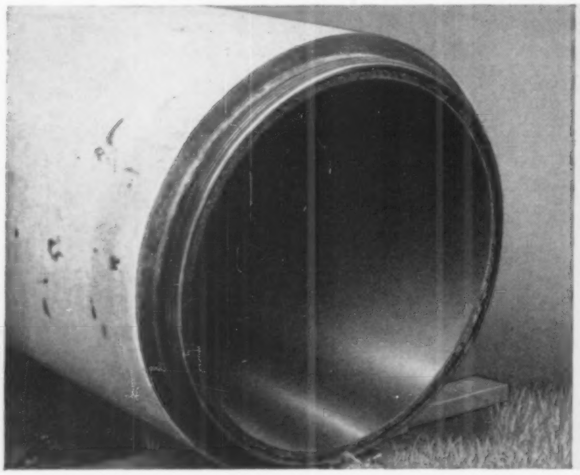
Onan®

World's
Leading Builder
of Electric
Power Plants

D. W. ONAN & SONS INC., 2554 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINN.

In KNOXVILLE, TENNESSEE *

TYLOX Rubber GASKETS,
REXON Rubber GASKETS,
and REXON PIPE COATING



PREVENT JOINT LEAKS, WHIP ACID ATTACK AND SPEED PIPE LAYING ON STORM-SANITARY SEWER PROJECT

Engineers and city officials went "Hamilton Kent" all the way, in the matter of selecting *leak-proof* pipe joints and *acid-resistant* pipe coating to protect Knoxville's new Riverfront-Willow Avenue sewerage and drainage project . . .

Heavy duty precision TYLOX Gaskets coupled the large diameter T & G concrete storm lines. REXON "K" Light Duty Gaskets jointed the smaller diameter B & S sewer lines, and tough, non-deteriorating REXON No. 2 Pipe Coating put a protective covering inside all lines that would serve nearby stockyards, butchering plants and other industrial installations.

In specifying Hamilton Kent TYLOX and REXON *rubber* Gaskets, and REXON Pipe Coating, engineers and city officials not only provided to the utmost for the safety and long life of the system, but made possible substantial savings in construction costs . . . Both TYLOX and REXON Gaskets are quickly assembled to pipe, and permit fast assembly of the line. Their flexible, *compression* seal compensates for pipe angularities, allows wet trench coupling, and immediate backfilling.

- **WRITE FOR BROCHURES** describing and illustrating use of Hamilton Kent TYLOX and REXON Gaskets and REXON Pipe Coating. Specify these products to protect **your** pipe projects from leakage and acid attack.

*

PROJECT: For City of Knoxville, Tenn., Riverfront-Willow Ave. storm and sanitary sewers.

ENGINEERS: H. R. Neal, City Engineer, and Roy I. Gentry, Service Director.

CONTRACTORS: Division A—Harrison Construction Company, Alcoa, Tenn. Division B—Blont Brothers Construction Company, Montgomery, Ala.

PIPE: T & G and B & S Concrete Pipe, manufactured by Sherman Concrete Pipe Company, Knoxville, Tenn.

5089

HAMILTON KENT
MANUFACTURING COMPANY
KENT, OHIO
427 West Grant Street **Orchard 3-9555**

FREE CATALOGS

These Catalogs Will Help You

Check over these listings which will provide you with important up-to-date information on equipment and services that will assist you in solving municipal problems.

Write to address given or circle corresponding number on free post card on page 55.

Electronic Parking Meter Coin Collection System

232 . . . whisks coins from meters by vacuum into a sealed "room" of a coin processing truck where they are sorted and electronically counted. Coins fall into locked vaults by denomination, ready for delivery to bank. For descriptive brochure, write BROADWAY MAINTENANCE CORP., PARKING METER DIV., 22-09 BRIDGE PLAZA NORTH, LONG ISLAND CITY 1, N. Y.

Restore Clogged Water and Sewer Mains

233 Wondering how best to restore your shrinking water and sewer mains to original flow capacity? You can obtain free facts, surveys and estimate on your problem from the nation's largest water main and sewer cleaning contractors. Write NATIONAL POWER RODDING CORP., 1000 S. WESTERN AVE., CHICAGO 12, ILL.

Detects Gas Leakage

234 Early detection of gas leakage results in safety, savings and efficiency. The Health V Type Leakage Control Survey finds and classifies gas leakage before trouble develops and enables efficient programming of maintenance and repair crews. For the facts, write HEATH SURVEY CONSULTANTS, INC., 574 WASHINGTON ST., WELLESLEY 81, MASS.

Building a Marina?

235 Planning to enlarge one? Have a problem with one? You can obtain excellent help from specialists in consultation for the design, construction and management of marina facilities. Write MARINAS UNLIMITED, 832 W. LAFAYETTE ST., EASTON, PA.

Water Purification Equipment

236 Literature on a complete line of dependable water purification equipment is available from ROBERTS FILTER MFG. CO., 601 COLUMBIA AVE., DARBY, PA. Products include horizontal and vertical pressure filters, swimming pool equipment, gravity filters, filtration plants and equipment, and water softening equipment.

Automates Water Systems

237 *Bulletin* 17-11 gives full facts on Teletax Telemetering, which measures and transmits data to and from remote locations and permits central reading with supervisory automatic control decisions. For a copy, write THE FOXBORO CO., 955 NEPONSET AVE., FOXBORO, MASS.

Padlocks

238 There's a Master padlock for every municipal protection need — water works, power plants, gates, control boxes, tools, etc.—and each padlock and its application is described and discussed in a free catalog, available from MASTER LOCK CO., MILWAUKEE 45, WIS.

Pump and Generator Engines

239 These engines operate on sewage gas, natural gas, butane, gasoline, or any combination. They range from 40 to 610 hp and are available in V-type or in-line type. For complete power chart and bulletins, write CLIMAX ENGINE MFG. CO., DIVISION OF WAUKESHA MOTOR CO., CLINTON, IA.

Play and Park Equipment

240 Safe, sturdy play facilities, colorful in concept and name, and designed to excite the imagination of youngsters, are presented in the current full-line catalog of THE MEXICO FORGE, INC., MEXICO, PA., along with such items as wood and charcoal burning stoves, park benches and bicycle racks.

Swimming-Pool Maintenance Aids

241 Valuable "how to" helps for better swimming pool maintenance are: (1) a 48-page Swimming Pool Catalog and Date Book; (2) an "Exit Algae" brochure, and (3) "Painting your Pool with Pool-Cote." All can be obtained from MODERN POOL CO., INC., 1 HOLLAND AVE., WHITE PLAINS, N. Y.

Water Meters for Sustained Accuracy

242 The latest catalog available from CALMET METER DIVISION OF WORTHINGTON CORP., 2301 S. MAIN, FORT WORTH, TEXAS, will bring you up to date on facts, features and applications of a complete line of precise water measuring instruments, time tested for accuracy, dependability and carefree operation.

Lightweight Protective Caps

243 Gentex has designed this new 8-ounce polyethylene cap to protect maintenance and service personnel against head injuries. It is well-ventilated, resists impact of 20-foot pounds, and features adjustable headband. For descriptive literature, write GENTEX CORP., 450 SEVENTH AVE., NEW YORK 1, N. Y.

"Mowing Magic"

244 This is the title of a colorful, illustrated folder that describes and gives full facts on an even-cutting, sturdy line of rotary power mowers. Models range from 18 inches through 72 inches. For a copy, write CLEAN-CUT MOWERS INC., P. O. BOX 701, DUNBAR, W. VA.

Hydraulic Cranes

245 Quickly, safely, precisely—that's the way these units operate, lifting, carrying and placing loads with true dexterity. There are 5 models, with up to 11-ton capacity ranges, and available with a wide choice of optional attachments and equipment. Write AUSTIN-WESTERN, CONSTRUCTION EQUIPMENT DIVISION, BALDWIN-LIMA-HAMILTON, AURORA, ILL.

Water Main Couplings

246 These non-rigid couplings speed steel water transmission main installations. They also protect the line by absorbing vibration, stresses of expansion and contraction, shocks and pressures of shifting or settling earth, and they allow up to 4° of pipe deflection at every joint. For full story, write DRESSER MANUFACTURING DIV., DRESSER INDUSTRIES, 60 FISHER AVE., BRADFORD, PA.

Trickling Filter Flies Beware!

247 R. S. C. kills psychodae adults, larvae and pupae in trickling filters —without damage to zoogleal film, without destroying beneficial bacteria, without reducing filter efficiency. And it is very effective in killing Psychodae which show resistance to other larvicides. For literature and field test reports, write GLENN CHEMICAL CO., INDUSTRIAL CHEMICALS DIVISION, CHICAGO 14, ILL.

Street Light Standards

248 A new 70-page catalog is packed full of engineering facts on both steel and aluminum lighting standards, octagonal in shape, designed for greater strength and offering 4 to 6 times greater corrosion resistance. For a copy, write KERRIGAN IRON WORKS CO., DEPT. A-5, NASHVILLE, TENN.

Mercury Lamps

249 These lamps are reported to deliver more light initially and maintain higher light output longer. They are available in a complete line—in clear, color-corrected and reflector types, and in sizes of 100 to 3000 watts. For informative literature, write WESTINGHOUSE LAMP DIVISION, WESTINGHOUSE ELECTRIC CORP., BLOOMFIELD, N. J. J

Prevent Water Supply Problems

250 The many techniques developed and offered by HALLIBURTON OIL WELL CEMENTING CO., DUNCAN, OKLA., can help you avoid such water supply problems as formations that become shut off, plugged screens, contaminated or exhausted water supplies. If these problems have already occurred, Halliburton can help you combat them effectively.

Unusual New Enamels

251 Now you can have one-coat equipment enamels that possess the rust inhibition properties of a primer and the durability of a finish coat. These enamels also inhibit under-the-film rust creepage and can be obtained in tints to match most standard equipment colors. For their full story, write NATIONAL LEAD CO., 111 BROADWAY, NEW YORK 6, N. Y.

Emergency Vehicles

252 For information on custom-body rescue squad cars, first aid cars and municipal ambulances, designed and built to meet specific requirements and to provide the utmost in use, write SHOP OF SIEBERT ASSOCIATES, INC., WATERVILLE, OHIO.

YOU NEED *These catalogs*

Write to address given or circle corresponding number on free post card on page 55.

New Sand Filter for Swimming Pools

253 Here's a filter that offers sand pressure efficiency, low operating cost and low silhouette (28 inches high), and features permanent rigid-rock media, multiport dial valve controls and noncorrosive underdrain. For a folder giving full facts on "Stubby" the AR-MAC sand filter, write NATIONAL POOL EQUIPMENT CO., LEE HIGHWAY, FLORENCE, ALA.

Lawn and Garden Tractors

254 There's plenty of power and capacity in these rugged units. And with their matched "Unit-Designed" tools they are ideally suited for park and cemetery maintenance, municipal and highway mowing, municipal lawn care. For descriptive literature, write SPEEDEX TRACTOR CO., RAVENNA, OHIO.

Tractor-Loader-Backhoe

255 Here's a team comprised of dependable tractor power, weight, fuel economy, top-producing loader with 2500-pounds lift capacity and 5500-pounds breakaway capacity, and rugged, powerful backhoe. It's the new Fordson Power Package. For details, write FORD MOTOR CO., INDUSTRIAL TRACTORS AND EQUIPMENT DEPT., BIRMINGHAM, MICH.

Kills Filter Flies at Sewage Plants

256 When applied into the main sewage line ahead of the trickling filter, this highly effective larvicide quickly delivers death-dealing blows to psycodid larvae. It neither affects the organic film on the filter media nor interrupts the normal service of the trickling filter. For full facts, write ZEP MFG. CORP., 1310 SEABOARD INDUSTRIAL BLVD., ATLANTA, GA.

For Your Safety Needs

257 Products that point the way to safety on the job are the subject of current catalog literature available from INDUSTRIAL PRODUCTS CO., 2968 N. FOURTH ST., PHILADELPHIA 33, PA. They include high-visibility reflective warning signs, utility flags, cones and plastic barrier rope.

Tandem Rollers

258 A completely integrated line of tandem rollers—14 models ranging from ½ ton to 14 tons—designed to provide more compaction at less cost for any size job, is the subject of literature offered by the ESSICK MFG. CO., 1950 SANTA FE AVE., LOS ANGELES 21, CALIF.

Precise Surveyor's Instrument

259 *Booklet* T-2 provides complete data on the T-2 Universal Theodolite, which enables the operator to work rapidly, precisely and steadily under all conditions. Accessories that increase work potential are also included. For a copy, write WH. D. HEERBRUGG INSTRUMENTS, INC., MAIN at COVERT ST., PORT WASHINGTON, N. Y.

Builds Concrete Pipe in Place

260 A process and the accompanying necessary equipment have been developed to lay 12- to 30-inch seamless, jointless concrete pipe in place at a rate of 8 to 12 feet a minute. An 8-page illustrated folder gives full facts. For a copy, write FULLERFORM CONTINUOUS PIPE CORP., SUITE 412, 2727 N. CENTRAL AVE., PHOENIX, ARIZ.

Reliable Power for Municipal Needs

261 There is a Superior engine for every municipal power need—diesel, duel-fuel, or gas engines ranging from 190 to 2,150 hp, or 150 to 1,500 kw. For complete line data, write WHITE DIESEL ENGINE DIVISION, THE WHITE MOTOR CO., SPRINGFIELD, OHIO.

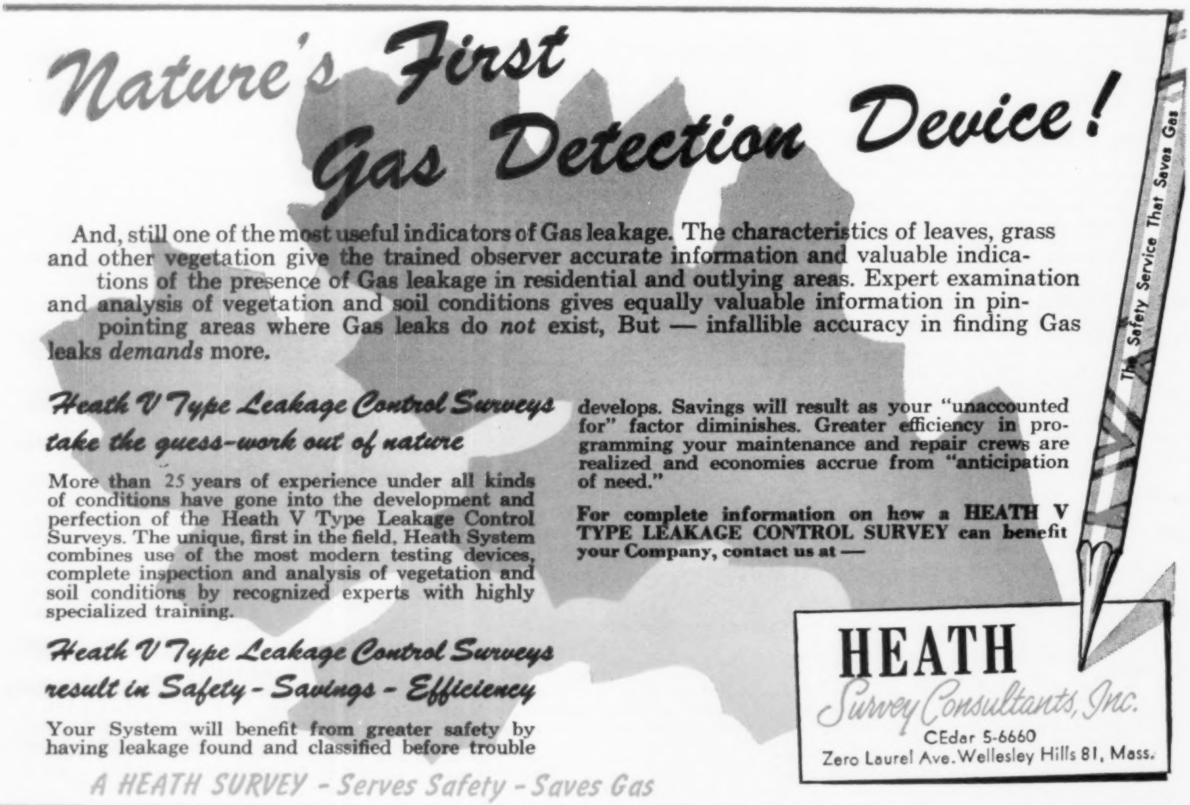
Large, Portable Refuse Containers

262 . . . are completely described in a new, fact-filled catalog that explains latest developments in waste and refuse storage and disposal. For a copy of 28-page *Catalog Brief* 160, write DEMPSTER BROTHERS INC., DEPT. AC-5, KNOXVILLE 17, TENN.

Long Range Earth Augur

263 This unit can reduce your labor costs 50%. It enables you to drill under lawns, shrubbery, walks, and streets without damage, without tearing up pavement or roadbed, and without disrupting traffic. For full facts, write MODERN PRODUCTS, INC., DEPT. AM-11, EXETER, NEB.

(See page 52 for more Bulletins)


Nature's First Gas Detection Device!

And, still one of the most useful indicators of Gas leakage. The characteristics of leaves, grass and other vegetation give the trained observer accurate information and valuable indications of the presence of Gas leakage in residential and outlying areas. Expert examination and analysis of vegetation and soil conditions gives equally valuable information in pin-pointing areas where Gas leaks do *not* exist, But — infallible accuracy in finding Gas leaks *demands* more.

Heath V Type Leakage Control Surveys take the guess-work out of nature

More than 25 years of experience under all kinds of conditions have gone into the development and perfection of the Heath V Type Leakage Control Surveys. The unique, first in the field, Heath System combines use of the most modern testing devices, complete inspection and analysis of vegetation and soil conditions by recognized experts with highly specialized training.

Heath V Type Leakage Control Surveys result in Safety - Savings - Efficiency

Your System will benefit from greater safety by having leakage found and classified before trouble develops. Savings will result as your "unaccounted for" factor diminishes. Greater efficiency in programming your maintenance and repair crews are realized and economies accrue from "anticipation of need."

For complete information on how a HEATH V TYPE LEAKAGE CONTROL SURVEY can benefit your Company, contact us at —

HEATH
Survey Consultants, Inc.
CEdar 5-6660
Zero Laurel Ave. Wellesley Hills 81, Mass.

A HEATH SURVEY - Serves Safety - Saves Gas

TURNS ODOR COMPLAINTS

INTO COMPLIMENTS

NEW GOLDEN SOLVEX CONCENTRATE FROM

NATIONAL CHEMSEARCH®

If your odor problems are from sewage plant overload or residential areas moving close to your plant, use golden Solvex concentrate. Solvex controls the growth of sulphide producing microorganisms . . . prevents growth of fungi . . . cuts slime and grease deposits . . . does not affect B.O.D. To control objectionable odors, dilute Solvex with water and apply near the source of the odor.

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For on-the-spot assistance, see your National Chemsearch representative. Well trained, experienced in dealing with your kind of problems . . . backed by one of the finest research staffs in the industry.

NATIONAL CHEMSEARCH® CORP.
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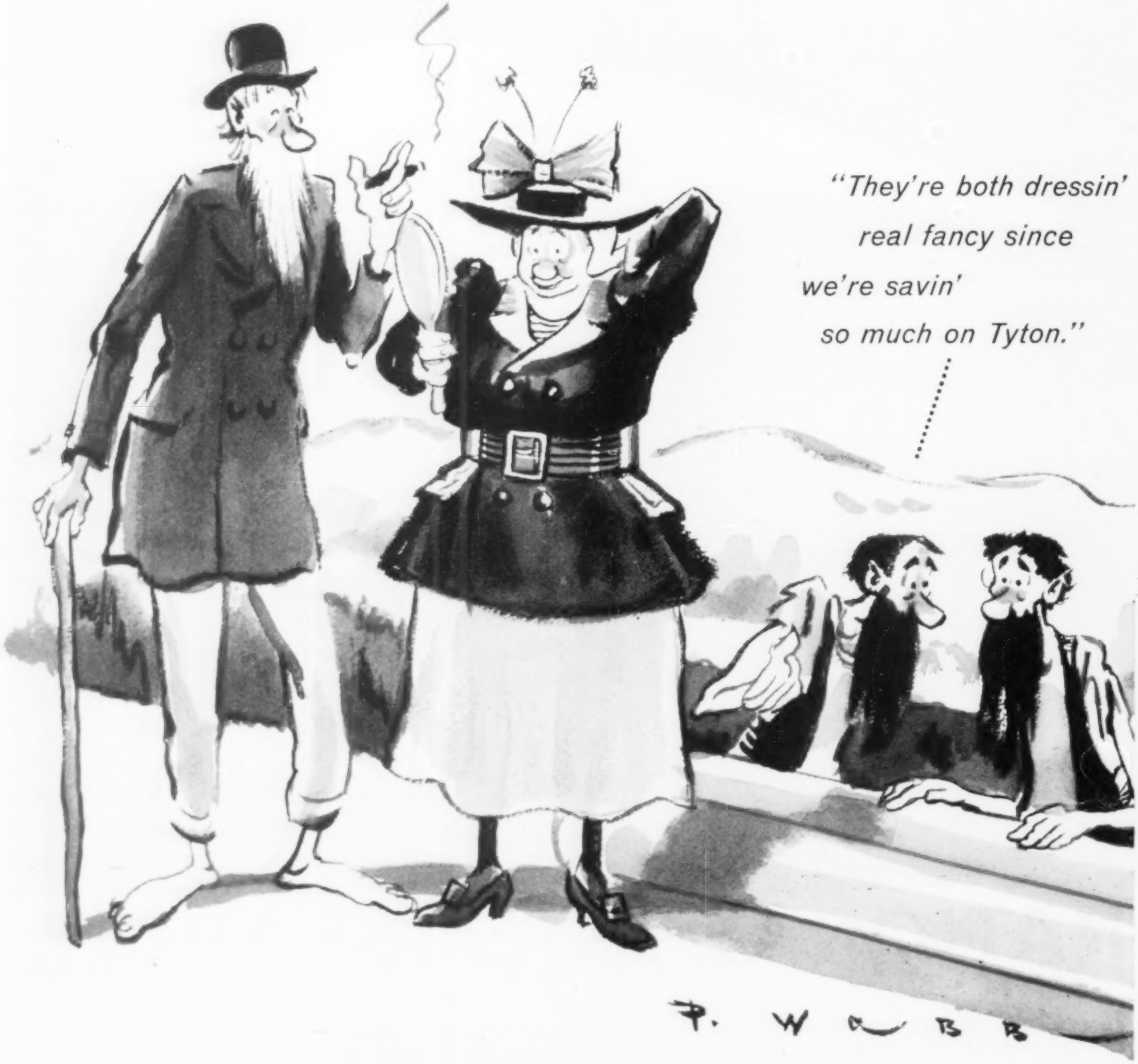
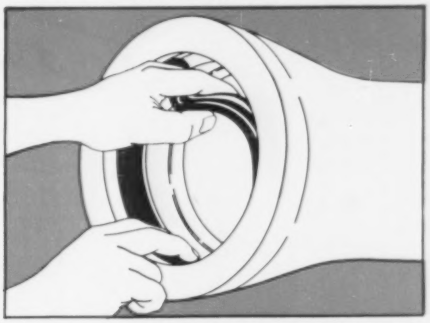
address all inquiries to: National Chemsearch; 2417 Commerce; Dallas, Texas


"They're both dressin' real fancy since we're savin' so much on Tyton."

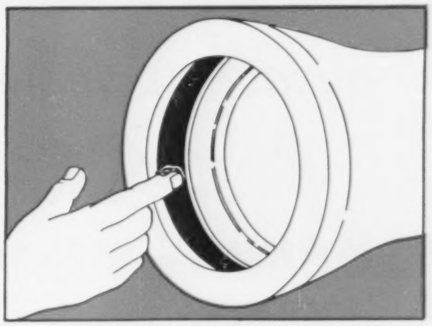
U.S. cast iron PIPE FOR WATER, SEWERAGE AND

TYTON®

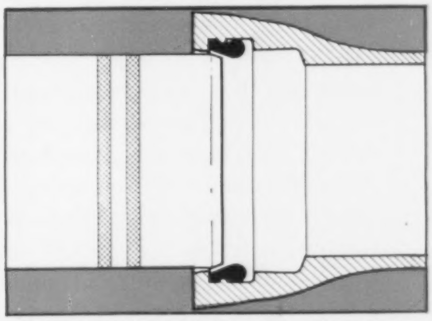
ONLY FOUR SIMPLE ACTIONS



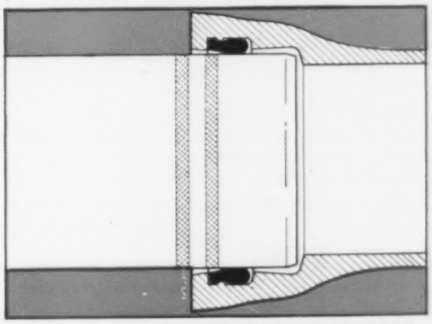
Insert gasket with groove over bead in gasket seat... a simple hand operation.



Wipe film of Tyton Joint® lubricant over inside of gasket. Your receiving pipe is ready.



Insert plain end of entering pipe until it touches gasket. Note two painted stripes on end.



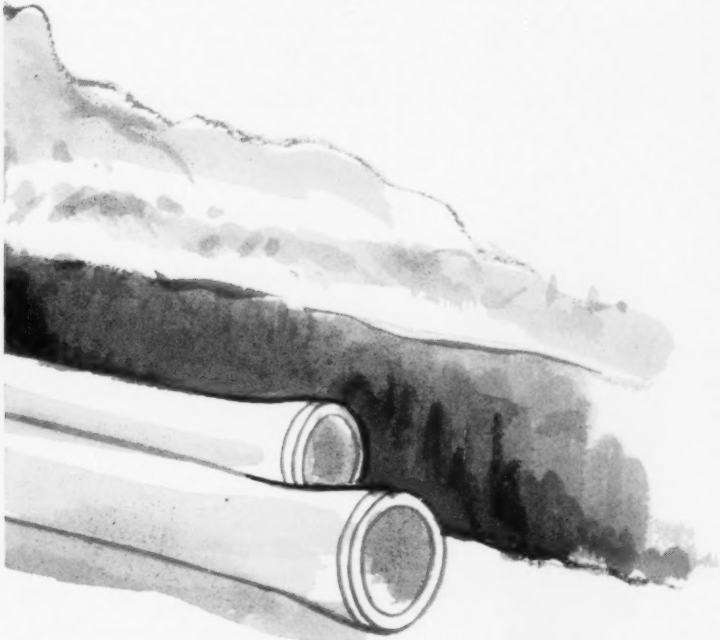
Push entering pipe until the first painted stripe disappears and the second stripe is approximately flush with bell face. The joint is sealed... bottle-tight, permanently! The job's done .... fast, efficiently, economically. Could anything be simpler?

saving's in style again!

Today ... figuring costs ... you need a sharper-than-ever pencil. And the closer and sharper you figure, the more you need Tyton.® The facts: Tyton Joint® pipe is easy to assemble ... can be laid faster even by green crews. Tyton cuts overhead, bookkeeping, storage costs—only one accessory needed. It increases working days ... can even be laid in rain or wet trench. Simple, speedy, sure, Tyton Joint pipe is tailormade to meet today's rising costs. Judge for yourself. For the full story, write or call.

U.S. PIPE AND FOUNDRY COMPANY
General Office: Birmingham 2, Alabama

A Wholly Integrated Producer from Mines
and Blast Furnaces to Finished Pipe.



INDUSTRIAL SERVICE CAST IRON®

Out of order

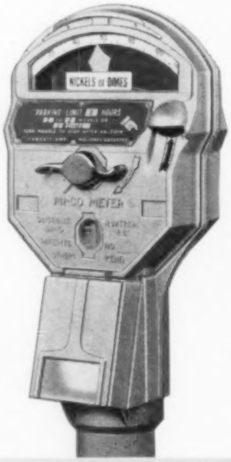
LOAFERS are ROBBERS!

replace them with

MI-CO

MANUAL METERS

Employ the meter that stays on the job, keeps traffic moving and revenue flowing! MI-CO manuals are doing it in over 500 cities, and they can do it for you. With only six moving parts, they are almost entirely free from the down time that offers many hours of free parking. Scientifically engineered for longer, profitable, trouble-free service in winter and summer, sun or rain. Adjustable to any number of hours; and 1¢ to 25¢, with one weatherproof coin slot. Twin automatics also available, and exclusive tamperproof coin collection system. Before you place or replace meters, get our engineers' complete MI-CO story.



A Symbol of High Quality

MI-CO PARKING METERS, P. O. BOX 668-A, COVINGTON, KENTUCKY

(The Michaels Art Bronze Co., General Offices and Plant, Erlanger, Kentucky)

OTHER MICHAELS PRODUCTS: Architectural Metal • Curtain Walls
Display Cases • Reversible Windows • Tablets • Memorials • Signs

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Tractor-Mounted Asphalt Spreader

264 . . . spreads material from a thin surface slurry coat to 2½ inches. It can attach to any tractor with 3-point lift. It can spread limerock and dolomite, and has special attachments to apply the spread slurry seal. For details, write HESTER PLOW CO., 1721 EGNER ST. (P. O. BOX 3655), JACKSONVILLE 6, FLA.

Truck-Cranes

265 These units make trucks self-loading and unloading. They are compact (require only 18 inches of mounting space), are hydraulically operated, and have a 280° boom swing—and are said to lift 2½ times as much as most end loaders. For catalog literature, write ANTHONY CO., STREATOR, ILL.

Surer Sealing Butterfly Valves

266 These valves are new in principle and performance—and they offer new advantages. To get all the facts on Darling-Pelton butterfly valves request *Bulletin* SLS-5708. Write DARLING VALVE & MANUFACTURING CO., WILLIAMSPORT 10, PA.

Motor Grader Loader

267 Geared for portable, high-speed, wide application loading, this unit is designed for use with Caterpillar Nos. 12, 112 and 14 motor graders. Together they blade, windrow, load, ditch, borrow, strip, top soil, and trench for road widening. *Form* No. 601 gives details. Write ULMAC EQUIPMENT CO., INC., EL PASO, ILL.

Pots, Buckets, Squeegees

268 . . . for handling hot or cold tar or asphalt for such jobs as crackfilling, pavement construction and repair, waterproofing, pipe coating, sealing, dust laying and carrying are detailed in literature available from TARRANT MFG. CO., 23 JUMEL PLACE, SARATOGA SPRINGS, N. Y.

Imaginative Play Equipment

269 All 40 pages of *Catalog* 960 are devoted to playground, park and sports equipment, designed for fun and appeal as well as function. Of particular interest will be the Saddle-Mate line of slides, swings and rides. For a copy, write GAME-TIME, INC., 602 JONESVILLE RD., LITCHFIELD, MICH.

Protects Wood

270 A wood preservative that protects against rot, decay and termite attack can be applied by brush, spray or quick-dip method. It's a nonconductor of electricity and is noninjurious to those who apply it. For explanatory literature on Carbolineum, write CARBOLINEUM WOOD PRESERVING CO., 6683 N. 40TH ST., MILWAUKEE 9, WIS.

Lightweight Traffic Cones

271 Traffic channeling utility repairs, line painting, emergency blockades —Safe-T-Cone traffic guides are easily adaptable to all situations. They are available in three sizes and can be stacked for easy storage. For full information, write RADIATOR SPECIALTY CO., CHARLOTTE, N. C.

(See page 54 for more Bulletins)

Pittsburgh-Des Moines the TOP NAME for QUALITY in ELEVATED STEEL TANKS

TORO-SPHERICAL 200,000 to 3,000,000 gallons

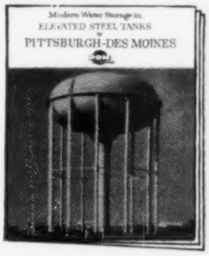
PEDESTAL SPHEROID
200,000 to 750,000 gallons

PEDESTAL SPHERE
25,000 to 300,000 gallons

PARKER
ERIE

WATERBALL
10,000 to 100,000 gallons

PDM
ELEVATED STEEL TANKS



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ELEVATED STEEL TANKS
by
PITTSBURGH-DES MOINES

SEND FOR NEW 20-PAGE CATALOG—FREE ON REQUEST

You can depend on PDM . . . for the *complete range* of modern elevated tank types and capacities to serve each water storage need . . . and the *quality of construction* that protects your community's investment over the greatest number of years of faultless service. • Almost sixty years of PDM experience in building steel elevated tanks is at your disposal. Write us!

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FREE catalogs

Write to address given or circle corresponding number on free post card on page 55.

Keeps Unpaved Roads Dust Free

272 Proper applications of Columbia calcium chloride keep unpaved roads firm, smooth and dust free by absorbing moisture from the air. It also helps reduce aggregate loss and contributes to driving safety. For details, write COLUMBIA SOUTHERN CHEMICALS CORP., ONE GATEWAY CENTER, PITTSBURGH 22, PA.

Fire Hydrant Meter

273 This fire-hydrant meter lets you know how much water is being used for street cleaning, sewer flushing, construction and similar purposes. *Bulletin* CF-246 reports how it measures exact quantities of flow during any temporary delivery from the hydrant. Municipalities use it to form the most equitable basis of payment for water consumed; fire departments, for testing hoses. Write HERSEY-SPARLING METER CO., 225 N. TEMPLE CITY BLVD., EL MONTE, CALIF.

Vehicle Warning Lights

274 When equipped with a Beacon Ray or Fire Ball warning light, scrapers, dump trucks, dozers, line markers and other municipal maintenance vehicles are less likely to become involved in accidents. *Bulletin* 113A gives full facts. Write FEDERAL SIGN & SIGNAL CORP., 13556 S. WESTERN AVE., BLUE ISLAND, ILL.

Electric Plant Bulletin

275 Folder H-43 describes the Kohler line of electric plants, designed to provide cost-saving independent power for emergency applications and reliable compact power for municipal operations such as street repair, park maintenance. For a copy, write KOHLER CO., KOHLER, WIS.

Sewage Lift Stations

276 An engineering data manual on a complete line of dependable factory-built single and duplex pneumatic ejector sewage lift stations with capacities of 30 gpm to 200 gpm can be obtained from DEPT. 10, SMITH & LOVELESS, DIVISION OF UNION TANK CAR CO., P. O. BOX 8884, KANSAS CITY 15, MO.

Prestressed Concrete Water Tanks

277 *Bulletin* T-22 presents the advantages of prestressed concrete tanks for storing water in terms of service life, construction costs, maintenance, and over-all costs. For a copy, write THE PRELOAD CO., INC., 355 LEXINGTON AVE., NEW YORK 17, N. Y.

Valuable Water Instrumentation Literature

278 LEUPOLD & STEVENS INSTRUMENTS, INC., 4445 N. E. GLISAN ST., PORTLAND 13, ORE., makes available: the *Hydrographic Data Book* ($1 per copy)—124 pages of technical data on recorded installations, plus hydraulic tables and conversion tables; the *Stevens Hydrologic Instrument Short Form Catalog* No. 23; and *Bulletin* 28 which describes the Model 60M meter which provides essential flow data for operation of sewage treatment plants.

For a More Efficient Power Plant

279 If you are planning a new municipal power facility and want to obtain up-to-date information on engine and automatic controls requirements that will help you offset rising costs and achieve true operating efficiency, write COOPER BESSEMER, MOUNT VERNON, OHIO.

A New Refuse Truck Body

280 Here's a refuse collection truck body designed with the small and medium-sized operator in mind, yet applicable for large operator use. A 4-page illustrated folder points out its important features. Write PACEMASTER CORP., 723-725 S. W. WASHINGTON ST., PEORIA, ILL.

Steel Grandstands

281 Current literature available from CENTRAL TEXAS IRON WORKS, GRAND STAND DIVISION, P. O. BOX 949, WACO, TEXAS, gives facts and specifications for these portable and permanent steel grandstands, designed to assure maximum spectator comfort and safety.

For Effective Refuse Disposal

282 The *C-E Incinerator Stoker Catalog* presents the facts about a stoker that's designed to handle all types of combustible refuse in quantities ranging upward from 50 tons per 24-hour day and may also be used with a C-E Raymond flash dryer system for sewage sludge disposal. Write COMBUSTION ENGINEERING, 200 MADISON AVE., NEW YORK 16, N. Y.

Galion Tandem Rollers

283 A new 8-page catalog covers the Galion 5-8, 8-10½, 8-12, and 10-14 ton sizes of Roll-O-Matic tandem rollers. Advantages of the various construction and operation features are fully described and illustrated. For a copy of *Catalog* No. 425, write GALION IRON WORKS & MFG. CO., DEPT. A-50, GALION, OHIO.

Traffic Signs and Equipment

284 . . . to serve municipalities of every size and to reduce the complexities of traffic control are presented in a series of illustrated folders by EASTERN METAL OF ELMIRA, INC., 121 HARRISON ST., ELMIRA HEIGHTS, N. Y.

Water Works Control Systems

285 Subject of *Bulletin* No. 5903 is an extremely flexible and dependable centralized monitoring and control system that makes possible control of every operation in your water system from a central station. For a copy, write FEMCO, INC., IRWIN, PA.

Fluid Meters

286 Operation, ranges, and installation requirements of complete line of Bailey Fluid Meters are included in new 8-page *Bulletin* 20, which also discusses integrators, compensators, and primary elements. For a copy, write BAILEY METER CO., 1050 IVANHOE RD., CLEVELAND 10, OHIO.

Why Improve Street Lighting Facilities

287 You'll find most of the reasons for, and advantages of improving street lighting in the brochure entitled "Good Roadway Lighting Saves Twice As Much As It Costs." For a copy, write SYLVANIA LIGHTING PRODUCTS, A DIVISION OF SYLVANIA ELECTRIC PRODUCTS, INC., DEPT. 63, SALEM, MASS.

Speed Building, Repairing of Concrete Structures

288 Cement Gun, which uses a sand cement product called "Gunite", saves time and money in building, repairing and waterproofing concrete construction. It's easy to operate, and can be used as a sand blaster to do a fast, thorough, clean job. For facts and application information, write CEMENT GUN CO., 1526 WALNUT ST., ALLENTOWN, PA.

These Water Meters Keep Dirt Out

289 The Rockwell line of Sealed Register water meters now includes ⅝", ¾", 1", 1½" and 2" sizes. Designed for better measurement of water use at lower cost, they feature magnetic drive, hermetically sealed register and only two parts that run in water. For literature, write ROCKWELL MFG. CO., 400 N. LEXINGTON AVE., PITTSBURGH 8, PA.

Extra-Long Cast Iron Pipe

290 Because of its longer length and 10% fewer joints, Griffin-20 pipe will help lower your pipe installation costs. It is available in 4" to 12" diameter size range and with a choice of slip-on mechanical, or bell and plain end joint. For literature, write GRIFFIN PIPE DIVISION, GRIFFIN WHEEL CO., COUNCIL BLUFFS, IA.

Protects Metal Against Rust

291 If you are not familiar with Rust-Oleum colors and properties, you'll want to send for a 30-page technical report that shows how R-O penetrates through rust to bare metal, a 38-page catalog explaining the "New Color Horizons" system, and a free test sample. Write RUST-OLEUM CORP., 2651 OAKTON ST., EVANSTON, ILL.

For Better Refuse Collection

292 Literature giving full facts on a container system of refuse collection that offers lower cost, neater, more sanitary operation, automatic continuous compaction of loads, and generally more efficient collection operation, can be obtained from ROTO PAC CONTAINERIZATION, CITY TANK CIRP., CORONA 68, N. Y.

Considering a Bond Issue?

293 Desire help? It can be obtained easily enough from the nation's second largest bank and a leading trustee for revenue bonds—THE CHASE MANHATTAN BANK, 40 WALL ST., NEW YORK 15, N. Y., which will provide the skill, experience, and high level efficiency to properly assist you.

Power Lawn Mowers

294 These mowers are designed to meet critical work schedules, reduce cutting and trimming time. Their cutting units are chain driven and counterbalanced for perfect synchronization and better performance on both wet and dry grass. For latest literature, write LOCKE MOWER DIV., LOCKE STEEL CHAIN CO., 1315 CONNECTICUT AVE., BRIDGEPORT 1, CONN.

Stops Undercutting Problems

295 KOPPERS CO., INC., TAR PRODUCTS DIVISION, DEPT. 103-E, PITTSBURGH 19, PA., has developed a new inhibitive primer that stops undercutting by forming a tight, tough bond with the surface to be protected. It's called Bitumastic 11 S, and is discussed in literature available on request. And ask about Bitumastic No. 33 and No. 44, two other new coatings.

(See page 60 for more Bulletins)

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BUSINESS REPLY CARD
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THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.

FEELING OUT-OF-DATE?

PAY WATER BILLS HERE

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

To THE AMERICAN CITY's Catalog Supply Department:
Please send me literature on items numbered as follows: starting on page 47

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A Listing of Your Business Connection Is Important

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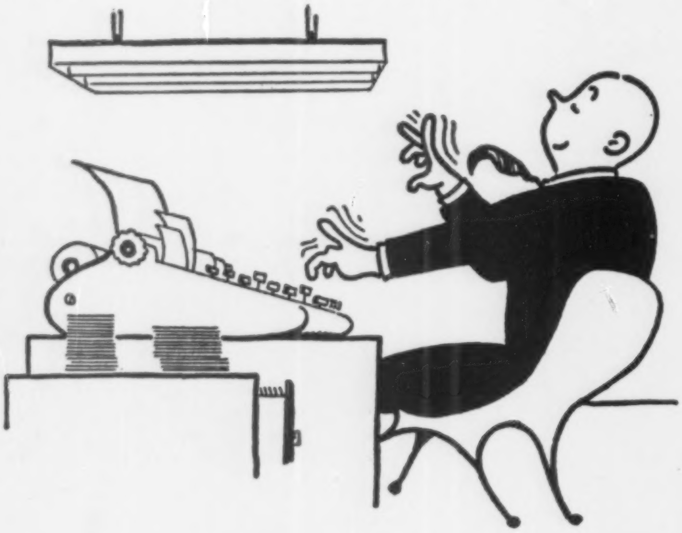
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THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
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Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.

Mayor Florimand J. Bergeron and Fire Chief J. Leo Rivard of Willimantic, Conn., discuss operation of the city's completely automatic Gamewell Fire Alarm System. The mayor, an ex-fire commissioner, is a key influence in progressive fire protection measures.

Their city gears fire protection to growth...

"We add fire alarm boxes and related equipment as fast as city growth demands and the budget permits."

These words by Mayor Florimand J. Bergeron of Willimantic, Conn., exemplify the city's forward-thinking attitude on fire protection. Guarded by Gamewell "Pull" Fire Alarm Boxes since 1887, this modern community of 18,000 has consistently expanded the system. Since 1954 alone, 22 new boxes have been added.

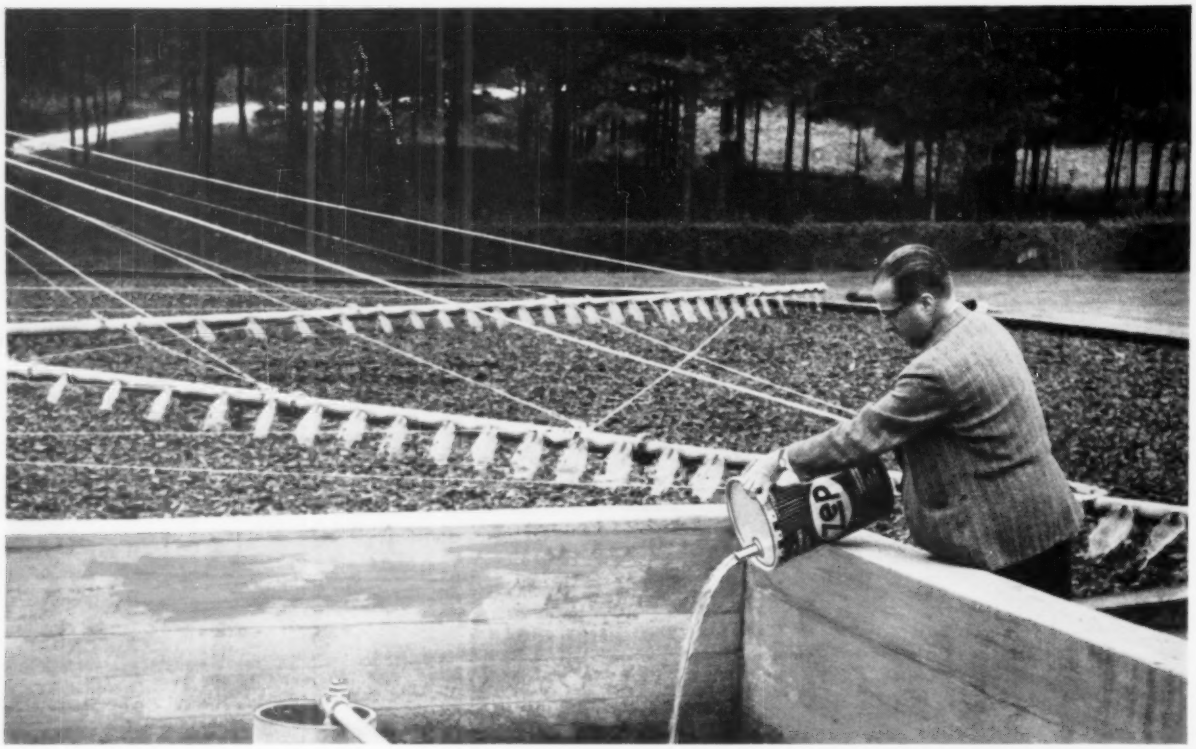
Willimantic city officials feel that the Gamewell System has thoroughly proved itself, both in action and in comparison with other types of fire alarm systems. When major replacements became necessary in 1954, a broad and intensive study of these other types was made. Unanimous decision of the mayor, his fire chief, and the board of fire commissioners was that no other system equalled Gamewell for dependability, efficiency, and economy.

Willimantic now has 90 boxes, including street boxes and those in schools, hospitals, industrial plants, old age homes and supermarkets. An alarm "pulled" from any one is *automatically* transmitted to *all* fire personnel: by direct lines to fire station and fire officers' homes; by means of an air horn to volunteer firemen. No one has to speak a word!

Has *your* community fire alarm protection as positive and as economical as that of Willimantic? Be certain. Let a Gamewell Survey answer this vital question without any obligation. Write THE GAMEWELL COMPANY, 1276 Chestnut Street, Newton Upper Falls 64, Mass.

Gamewell

FIRST...WHEN SECONDS COUNT



This man is controlling Filter Flies THE EASY WAY

He's injecting a calculated dose of new ZEP FILTER FLY KILLER into the main sewage line ahead of the trickling filter. It will take only a few minutes of his time to apply this highly effective larvicide . . . the rotating arms of the filter will do the rest. This simple procedure results in almost total extermination of filter fly (Psycodid) larvae. The organic film on the filter media is unaffected, there is no harmful effect to the treatment process, and no interruption of the normal service of the trickling filter.

ZEP FILTER FLY KILLER delivers its death dealing blows to filter fly larvae by using a tested combination of two potent killers . . . malathion and dieldrin, each a deadly agent in its own right. Dosage is calculated according to gallons-per-minute flow of sewage to the filter. The job can be done in a matter of minutes and no special equipment of any kind is needed. Already in widespread use, ZEP FILTER FLY KILLER provides the most trouble-free and least expensive method of controlling the offensive filter fly.

For details on Zep Filter Fly Killer, contact your Zep Maintenance Expert or write today, you'll have an immediate reply.

FIRST *in maintenance and sanitation*

FIRST IN MAINTENANCE PRODUCTS
Zep

ZEP MANUFACTURING CORPORATION

ATLANTA
1310 Seaboard Industrial Blvd.

CLEVELAND
13112 Broadway

KANSAS CITY
111 E. Tenth Avenue

DALLAS
1103 Slocum St.

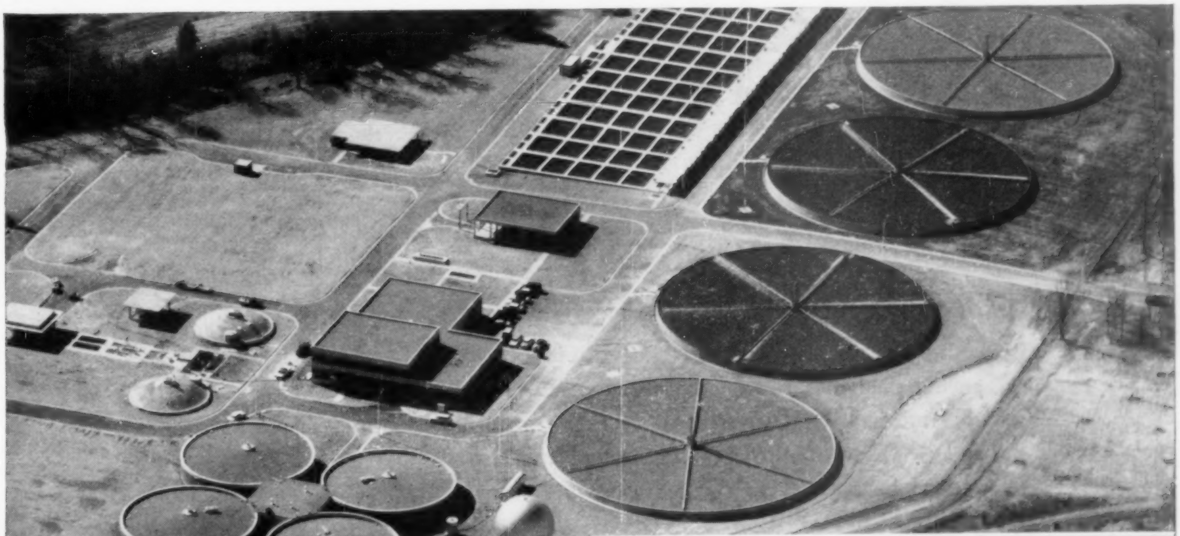
Winston-Salem is Big Business

When a city jumps from 13,600 to 93,000 in population in less than four decades—you have "bigness" in growth. When that same city becomes a leading industrial center and has an industrial waste almost equivalent to its expanded population—you have "bigness" all over again. Winston-Salem is that city!

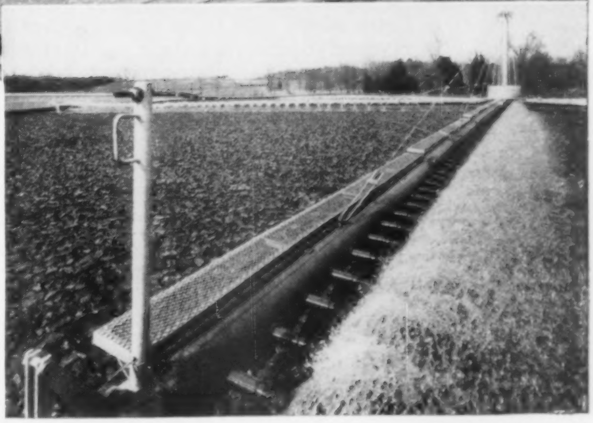
The four giant P.F.T. Rotary Distributors, 200′ in diameter, are characteristic of this tremendous growth. Equipped with specially designed P.F.T. Spreader Jets, for uniform distribution, these soundly engineered and ruggedly constructed distributors handle a flow of 25.0 mgd!

Other P.F.T. equipment in this modern sewage treatment plant, capable of handling a population equivalent of 200,000 and designed by Piatt and Davis of Durham, N.C., includes: Four 90′ Floating Covers, three complete Pearth Gas Recirculation Systems (the fourth digester is arranged for future Pearth which can be installed without interrupting digester operation), three P.F.T. #750 Heaters and Heat Exchangers that are gas and oil fired, Gas Safety Equipment, Supernatant Equipment and Floating Cover Gauge Boards with High and Low Level Alarms.

Crack engineering and construction teams, along with high quality P.F.T. sewage treatment equipment, gives progressive Winston-Salem truly a plant to be proud of.



(*Above*) This is Winston-Salem's Sewage Treatment Plant. Engineering skill and modern treatment equipment makes this plant one of the finest in the country



(*Right*) 3 tons of bronze forgings are incorporated in the four P.F.T. Rotary Distributors at Winston-Salem. The P.F.T. Spreader Jets are two-piece forged bronze units with removable deflectors.

P.F.T.

waste treatment equipment
exclusively since 1893

PACIFIC FLUSH TANK CO., 4241 Ravenswood Avenue, Chicago 13, Illinois
PORT CHESTER, N. Y. • SAN MATEO, CALIF. • CHARLOTTE, N. C. • JACKSONVILLE • DENVER

YOU NEED *These catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Portable Fire Protection Pumps

296 These self-priming centrifugal fire pumps incorporate many new developments in pump design. They are available in sizes of 1½" through 3" and in light weight aluminum or cast-iron construction. Power source is a heavy-duty, 4-cycle engine. *Bulletin* CP 1-21 gives full facts. Write RICE PUMP & MACHINE CO., BELGIUM, WIS.

Refuse Collection

297 Descriptive literature from GAR WOOD INDUSTRIES, INC., WAYNE, MICH., stresses six performance features of the Load-Packer 600 which enable it to reduce refuse collection costs: fastest operation; greatest compaction; biggest legal payload; largest, lowest hopper; simple foolproof controls; greatest operating economy.

Aluminum Lighting Cable

298 First installation of aluminum cable for highway interchange lighting in Wisconsin has just been completed. It serves 300 mercury vapor luminaires at 22% cost savings over copper cable. For full facts, write KAISER ALUMINUM & CHEMICAL CORP., KAISER CENTER, 300 LAKESIDE DRIVE, OAKLAND 12, CALIF.

Construction Machinery

299 ALLIS-CHALMERS MFG. CO., CONSTRUCTION MACHINERY DIV., MILWAUKEE, WIS., has released four new pieces of literature: 20-page *Catalog* MS-1357 reviews the 340-hp, 30-yard heaped TS-360 motor scraper; *Folder* UT-116 illustrates the D-10 and D-12 utility tractors; *Catalog* MS-1319 is a revision of a catalog covering the Model D motor grader; *Catalog* MS-1322 highlights the 155-hp, 9.5-cubic-yard (heaped) TS-160 motor scraper.

Lie Detection Manual

300 This new manual tells the history of scientific lie detection and gives outstanding case histories. It has been prepared by the makers of the Keeler Polygraph and will be sent without cost to those professionally interested in public safety. For a copy of "The Truth," write KEELER POLYGRAPH DIV., ASSOCIATED RESEARCH, INC., 3777 W. BELMONT AVE., CHICAGO 18, ILL.

Jack of Municipal Jobs

301 Looking for a really versatile piece of municipal equipment? One that travels to the job under its own power? Works the year 'round, in any season and in any weather? One that plows snow, loads leaves, digs, spreads black top, backfills? Then you'll want to send for data on the "Payloader" line and attachments. Write THE FRANK G. HOUGH CO., 710 SUNNYSIDE AVE., LIBERTYVILLE, ILL.

Stops Odors—
Free Test Sample

302 Here's a product that masks existing odors while it attacks their causes. It puts an end to odors quickly and economically in sewage plants, land-fill waste disposal areas, drainage ditches, incinerators, storm sewers, etc. For specific information, and a free test sample of Ozene, write ALLIED CHEMICAL, SOLVAY PROCESS DIVISION, 61 BROADWAY, NEW YORK 6, N. Y.

Brush Chippers—
Facts and Figures

303 Brush removal can be complicated, expensive and tedious—or it can be simple, speedy and economical. For important articles describing five methods of brush disposal, and ten new ways to utilize brush chips, and for a 20-page brush disposal booklet that will help you "chip dollars from your overhead," write FITCHBURG ENGINEERING CORP., FITCHBURG, MASS.

Small in Size, Big in Capacity

304 That's the new 77 Trenchliner, which digs to a maximum depth of 5 feet and produces from 4.4" to 21 lineal feet of trench per minute, in widths from 6" to 18". The numerous ways in which it can help you with service lines, small mains and footings are described in literature, available from PARSONS CO., NEWTON, IA.

Tandem Rollers

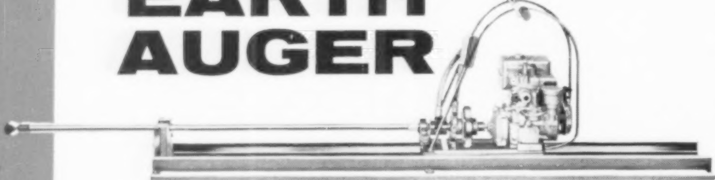
305 The drive and control features and performance abilities of tandem rollers in the following classes—3-5 ton, 4-6 ton retractable, 5-8 ton, 8-10 ton, 10-14 ton—are thoroughly explained in literature offered by HUBER-WARCO CO., MARION, OHIO. Catalog on motor graders, 3-wheel rollers and the H-W Maintainer and attachments also are available.

(See page 62 for more Bulletins)

CUT LABOR COSTS 50% with the

"modern"

EARTH AUGER

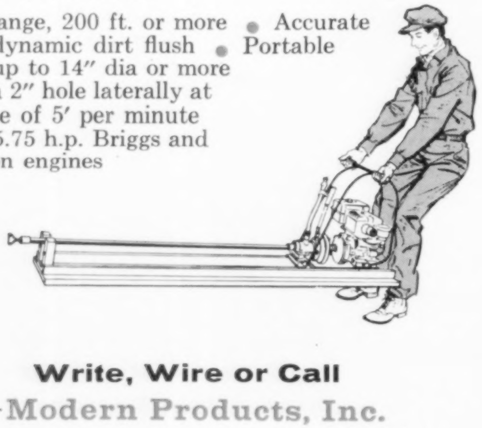


FIRST JOB OFTEN PAYS FOR AUGER

Drill under shrubbery, lawns, walks, terraces, instead of causing unsightly damage by trenching. Drill under streets, railroads, highways, etc., without tearing up the pavement or roadbed and disrupting traffic.

ONE-MAN OPERATION

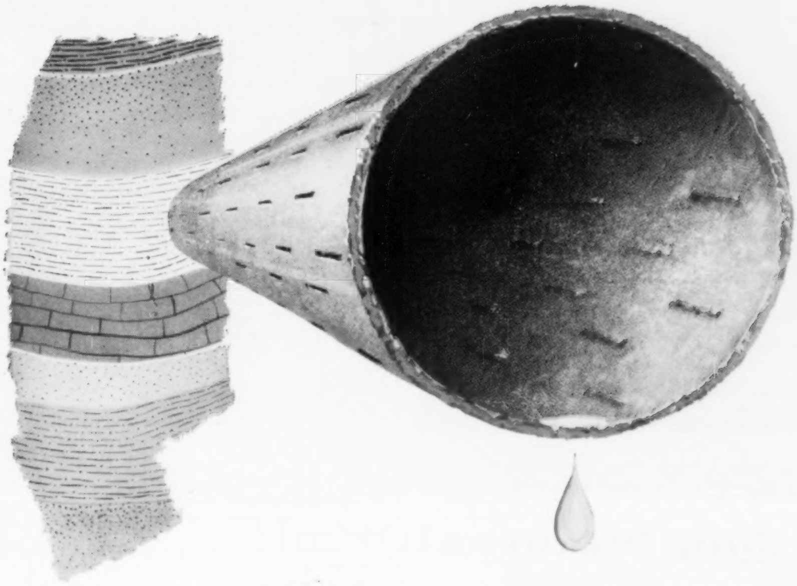
- Long range, 200 ft. or more
- Hydrodynamic dirt flush
- Drills up to 14" dia or more
- Drills a 2" hole laterally at the rate of 5' per minute
- 3 and 5.75 h.p. Briggs and Stratton engines
- Accurate
- Portable



Write, Wire or Call

Modern Products, Inc.

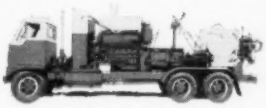
Dept- AM-11, Exeter, Nebraska Phone Exeter 4281



"THE NEED FOR WATER HAS NEVER BEEN GREATER"

To people around you, the end of a convenient water supply may seem unbelievable . . . unthinkable . . . but you know the *truth* behind this prevalent belief. You know formations can become shut off . . . screens can become plugged . . . water flow can become contaminated – or even exhausted. You face these problems every day. It is very important for you to be aware of the many techniques developed and offered by Halliburton. They may help you avoid these difficulties before they arise . . . or help combat them once they occur.

Halliburton has gained the trust of thousands of engineers all over the world. For over 35 years, Halliburton has had men, materials and equipment on the job . . .



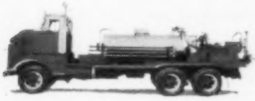
- Performing well completion and remedial cementing work with unmatched efficiency.
- Running formation testing tools to provide well owners with specific aquifer information.
- Helping to safeguard the life of wells.
- Employing the Hydro-Sonic Redevelopment technique and other stimulation methods to help increase production.

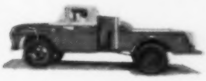
The combined experience, facilities and teamwork of the entire Halliburton organization is dedicated to assist you with your specific well problem. Use this helpful service . . . it's as near as your phone!

HALLIBURTON

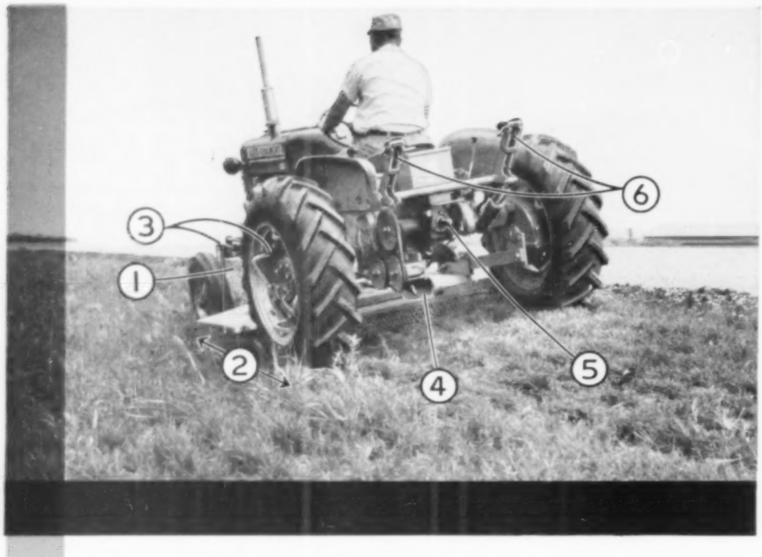
WATER WELL SERVICES

Visit our booth at the A.W.W.A. Convention in Bal Harbour, Florida.





HALLIBURTON OIL WELL CEMENTING COMPANY — DUNCAN, OKLAHOMA



In one glance
6 outstanding features!

① *Unusual* clearance under the engine to mount and operate equipment efficiently.
② *Longer* wheel base for stability—and it still turns tighter than most.
③ Power-Shift rear wheels and adjustable front axle for added stability on slopes.
④ SNAP-COUPLER hitch for quick-attaching Allis-Chalmers equipment. Converts to 3-point hitch.
⑤ Rear power take-off to drive sprayers and similar units.
⑥ Hydraulic lift arms to raise and lower mounted blades, harrows, mixers, etc.

Allis-Chalmers utility tractors have more practical engineering than you have ever had available before.

The first glance is just the beginning! Get *all* the facts—it doesn't cost to find out!

SNAP-COUPLER is an Allis-Chalmers trademark.

ALLIS-CHALMERS

60-11
ALLIS-CHALMERS MFG. CO.
Utility Tractors & Equipment, Milwaukee 1, Wisconsin
Please send me more information about Allis-Chalmers utility tractors with ☐ Rotary ☐ Flail-type ☐ Cutter Bar ☐ Other ____
Name ____
Firm ____
Address ____
City ____ State ____

D-10 • D-12 • D-14 • D-17
Utility tractors from 31 to 63 engine horsepower with companion equipment to match your needs!

SOLD BY ALLIS-CHALMERS DEALERS EVERYWHERE

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 55.

Clean Water Meters Safely, Quickly

306 Water meters can now be cleaned thoroughly and effectively in just 5 minutes, without scratching, scouring or change in precision balances. For facts on the Liquid Honing method, write VAPOR BLAST MFG. CO., 3037 W. ATKINSON AVE., MILWAUKEE 9, WIS.

Protective Coatings Booklet

307 A new, 13-page illustrated booklet (# CAC-11-498) describing the complete line of coal-tar protective coatings available from ALLIED CHEMICAL CORPORATION, PLASTICS AND COAL CHEMICALS DIV., BOX 75-W, 40 RECTOR ST., NEW YORK 6, N. Y., lists detailed specifications, resistance properties and typical uses.

A Space-Saver Park Slide

308 . . . featuring bright, weather-proof colors over galvanized iron and stainless steel bedway, offers safe fun in about ¼ the space required by standard slides. It's one in a complete line of attractive, sturdy play equipment for totlots and playgrounds available from J. E. BURKE CO., P. O. BOX 986, DEPT. 41, NEW BRUNSWICK, N. J.

Digs Holes In Rocky Ground

309 Newly designed "Polerbore" auger digs through frozen ground, shale, rock, sandstone and concrete. It is available in 10″ to 36″ diameter and digs to any depth, depending on earth boring machine used. For full facts, write TRAINER ASSOCIATES, INC., NEW CASTLE, DEL.

Reduce Municipal Mowing Costs

310 If you want to mow more park, playground and other green areas more quickly, more easily and more economically, you'll want to obtain the latest literature available from SPECIALTY MFG. CO., P. O. BOX 7616, HOUSTON, TEXAS. It describes the 15′ Terrain King (actually three mowers in one) and the several S.M.C. Mowal models, designed for any mowing job, for any tractor.

Lay Low-Cost Curbs Automatically

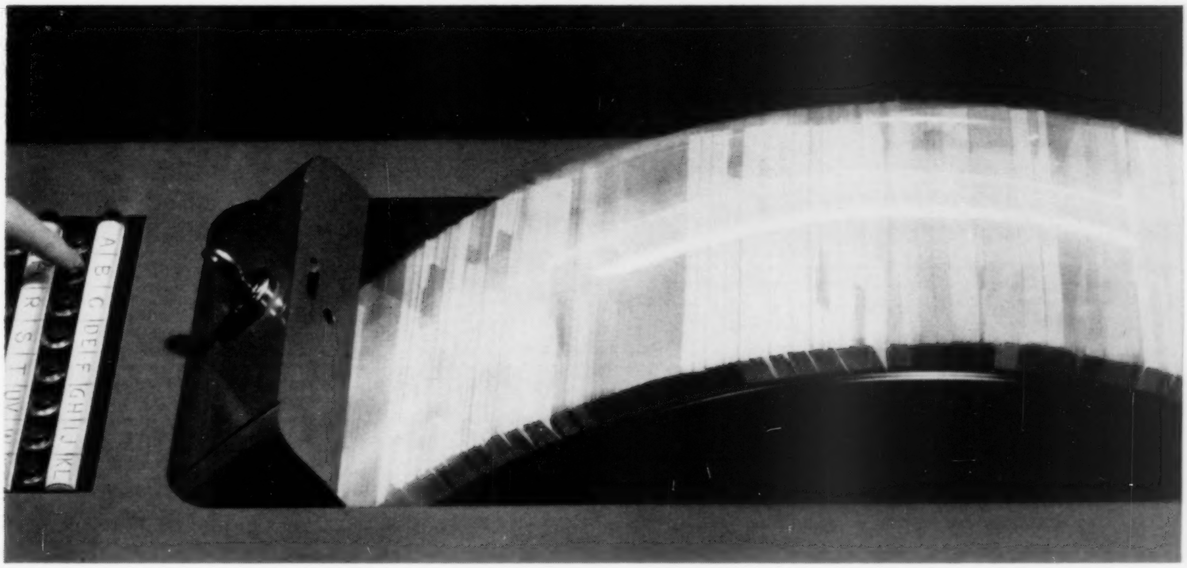
311 The MC-500 is a low-cost, self-propelled unit that lays both asphalt and concrete curbing, automatically extruding material through a compaction chamber and curb form which is attached to the curber itself. For descriptive literature, write MILLER SPREADER CORP., 4020 SIMON RD., YOUNGSTOWN, OHIO.

Film on Hurricane-Resistant Structures

312 The Atlantic hurricane is the villain of a new film on wind-resistant construction, entitled "Fury of the Winds." Municipal officials, school and college groups, civic and service groups may borrow a 16mm print of it free of charge except postage. Write BETHLEHEM STEEL CO., PUBLICATIONS DEPT., BETHLEHEM, PA.

(See page 67 for more Bulletins)

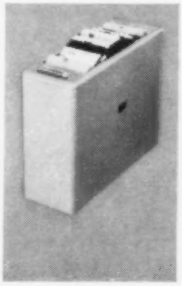
How to give your old cards...



...new *zip!*

Simply *lift* them out of your present tray or drawer files, *drop* them in Revo-File, and watch the card you want *zip* to your fingertips. Revo-File is Mosler's amazing new rotary file that's entirely different from old-style files in capacity (holds up to 6,000 cards), ease of finding and filing (takes 1½ seconds to pull card you want), and mobility. Other models available with capacities up to 700,000 cards.

REVO-FILE SYSTEMS DIVISION, THE MOSLER SAFE CO.



Dept. **AC-560**, Revo-File Systems Division,
The Mosler Safe Co.,
320 Fifth Ave., New York 1, N. Y.

Send me information on **MOSLER REVO-FILE**

NAME ____________________

COMPANY ____________________

ADDRESS ____________________

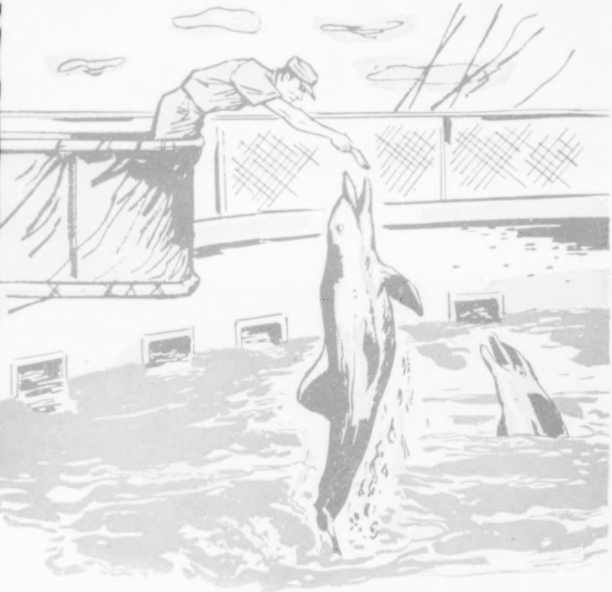
CITY ____________ ZONE ______ STATE ______

800-sq. ft. filtering system has 4" manifold with 28 ten-ft. lateral attachments of 2" pipe (shown above before being covered by sand filtering element).

MARINE ARENA PROTECTS $700,000 INVESTMENT WITH

RIGID PIPE

made of ***ABS*** *Plastic*



RIGID PIPE FILTERING SYSTEM INSTALLATION OFFERS NEW PROOF OF SUPERIORITY OVER CONVENTIONAL TYPE

Nearly three-quarters of a million dollars worth of marine life and equipment—including "Paddy", the famous performing porpoise—is now being protected by a new, rigid ABS pipe filtering system. This unique application, using Crescent Plastic's CYCOLAC ABS pipe, has ended all fear of filtering system failure for the Marine Arena of Madiera Beach, Florida. In previous applications, metal pipe had failed in a matter of weeks, and polyethylene pipe had caused constant concern for years. Now, with rigid pipe on the job, Marine Arena obtains a high level of clear, pure water, with satisfactory protection against rust, corrosion and ionization caused by salt water.

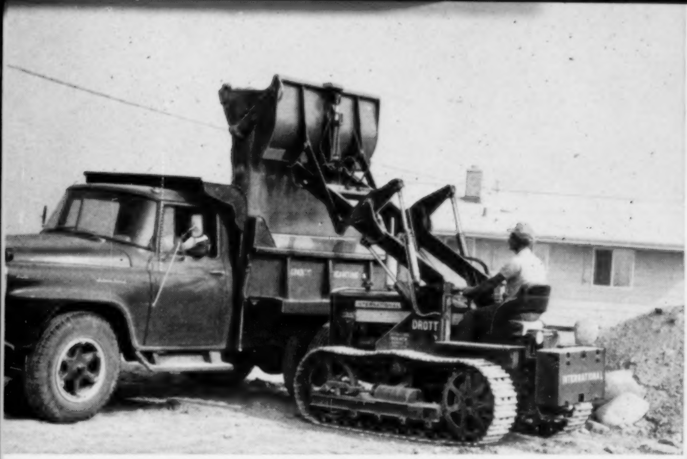
BE *ABSolutely* SURE . . .
INSIST ON RIGID *ABS* PIPE
made of
CYCOLAC®
THE BORG-WARNER PLASTIC THAT IS TOUGH, HARD AND CORROSION-RESISTANT

Write for the name of your nearest supplier

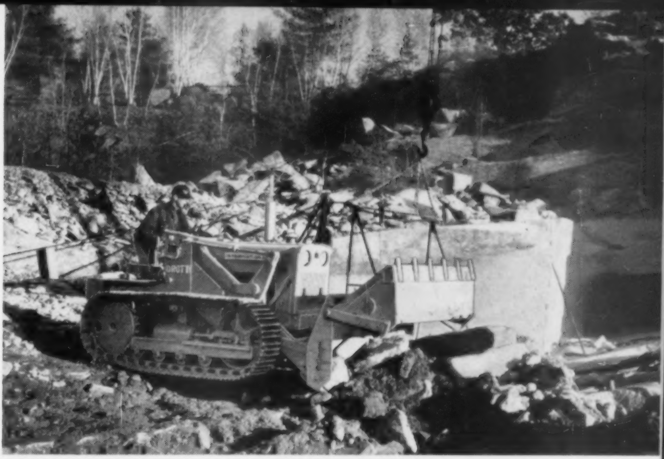
MARBON CHEMICAL
WASHINGTON

MARBON CHEMICAL
B-W
BORG-WARNER

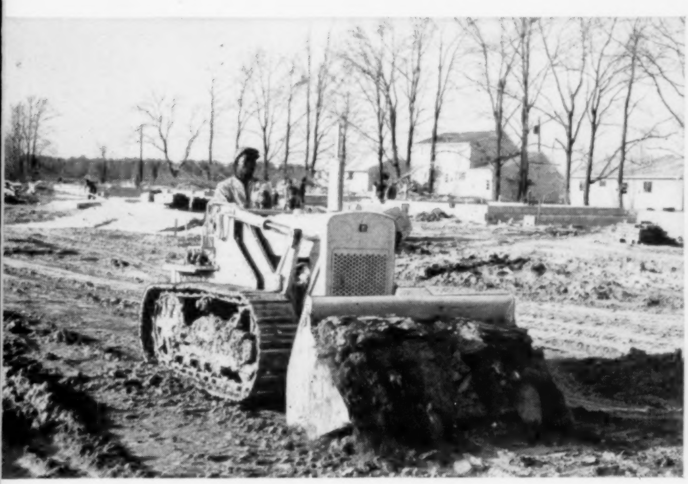
DIVISION **BORG-WARNER**
WEST VIRGINIA



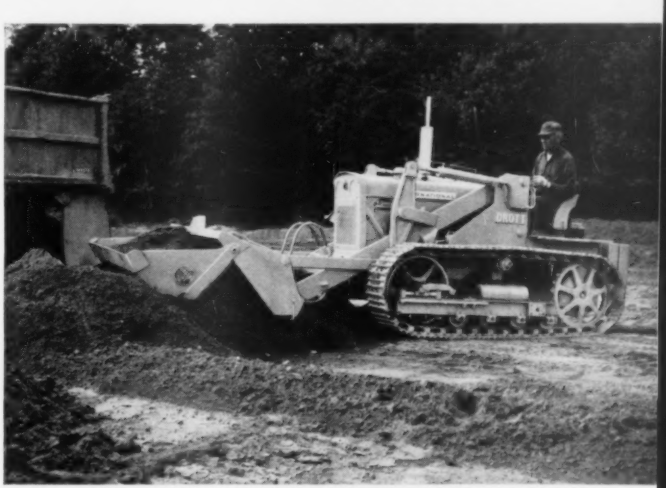
Dumping through the bottom of the bucket clears sticky materials, increases dumping height to 9 ft, 6 in.



Dozer moldboard is tilted forward or backward to increase or decrease depth of cut for precision grading accuracy.



In scraper position the 4-in-1 loads from the bottom with the fast, live "boiling action" of earthmoving scrapers.



With the 4-in-1 clamshell you have exclusive ability to "surround" loose materials instead of chasing them.

Now! Profit-earning Four-in-One in a ¾-yard economy size

For thousands of dollars less than ever before you now can profit from the unlimited job range of an International Drott 4-in-1! The low-cost but rugged International Drott T-340 4-in-1 opens vast profit opportunities new to the 45 hp* loader class. At the touch of a hydraulic control lever the 4-in-1 does the work of a carry-type *scraper*, a *bulldozer*, a *clamshell*, as well as of a conventional *loader*... Yet, your investment is only a little more than for a single-purpose ¾-yard loader! With the T-340 4-in-1 you can handle dozens of specialized jobs you can't touch with a limited-duty rig. Operating costs are *low* because of the T-340's rugged dependability and proven fuel economy. Output is *high*, because of the T-340's proven ability to deliver greater push and pull-power—to move bigger loads faster and at lower cost—than any other tractor in its size class!

An earthmoving fleet at your fingertips!

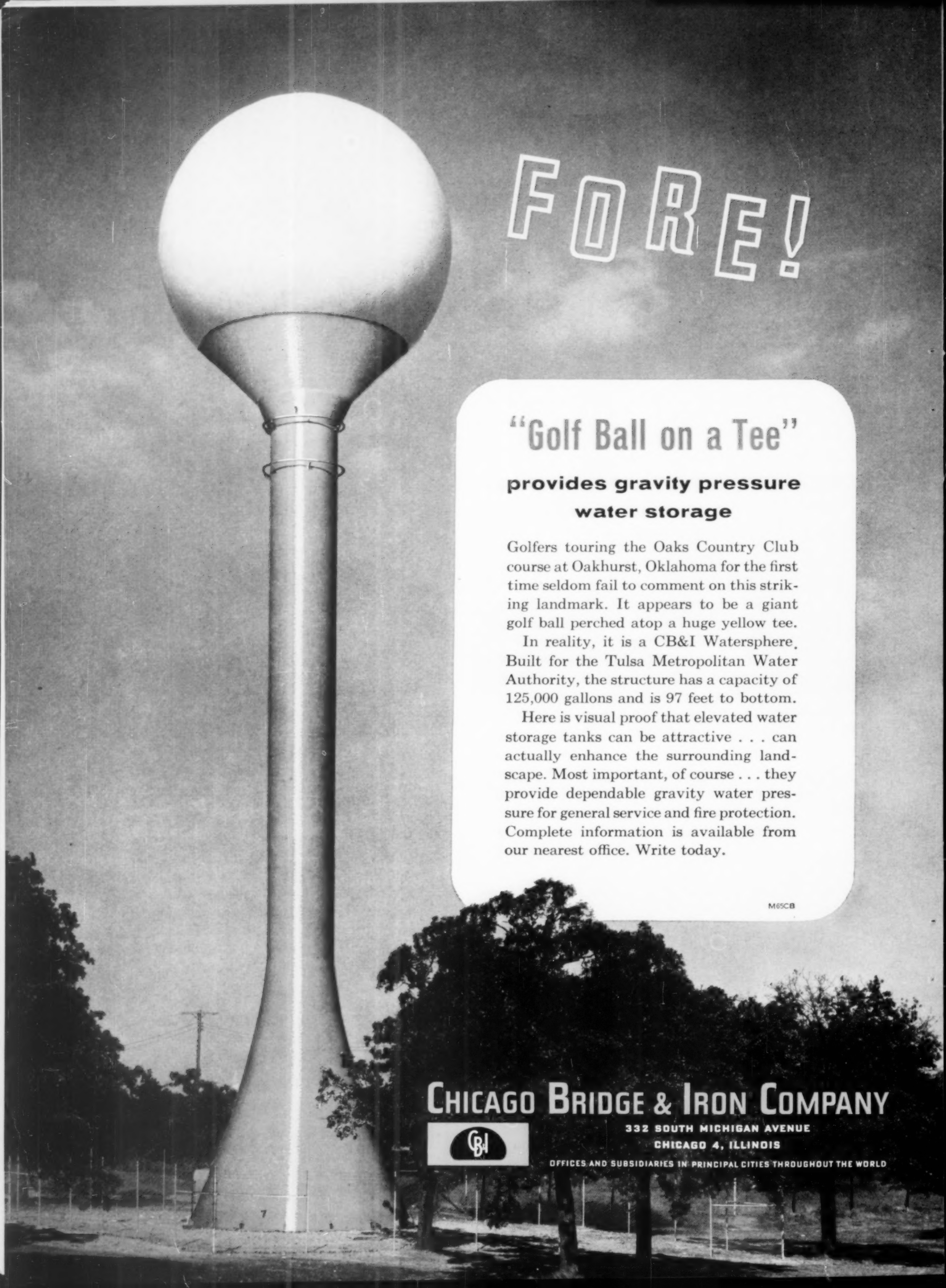
Prove the exclusive profit-boosting advantages of an International Drott T-340 4-in-1 for yourself. Your IH dealer will gladly demonstrate! For his name and specification folder, write International Harvester Company, Dept. AC-5, P. O. Box 7333, Chicago 1, Ill.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL HARVESTER

INTERNATIONAL®
DROTT®

**Maximum engine horsepower at standard conditions.*



"Golf Ball on a Tee"

provides gravity pressure water storage

Golfers touring the Oaks Country Club course at Oakhurst, Oklahoma for the first time seldom fail to comment on this striking landmark. It appears to be a giant golf ball perched atop a huge yellow tee.

In reality, it is a CB&I Watersphere. Built for the Tulsa Metropolitan Water Authority, the structure has a capacity of 125,000 gallons and is 97 feet to bottom.

Here is visual proof that elevated water storage tanks can be attractive . . . can actually enhance the surrounding landscape. Most important, of course . . . they provide dependable gravity water pressure for general service and fire protection. Complete information is available from our nearest office. Write today.

M65CB

CHICAGO BRIDGE & IRON COMPANY

332 SOUTH MICHIGAN AVENUE
CHICAGO 4, ILLINOIS

OFFICES AND SUBSIDIARIES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Truck-Body Spreaders

313 *Form* No. 20M 10-59 illustrates and gives pertinent facts about Fox dual-purpose mountable spreaders for sand, cinders, chips, salt and calcium chloride. Detailed specifications and optional equipment are included. For a copy, write FOX RIVER TRACTOR CO., 1020 N. RANKIN ST., APPLETON, WIS.

Tree Care, Mosquito Control

314 Special dutch elm disease and mosquito control data, plus free catalogs on equipment that can be used for various community spraying needs including fly and mosquito control and leaf windrowing, can be obtained from JOHN BEAN DIVISION OF FOOD MACHINERY AND CHEMICAL CORP., LANSING, MICH.

For Liquid-Level Control

315 *Bulletin* W-5A gives facts on sensitive float valves that automatically hold water level to a ½- or 1-inch variation in tanks and bins, and are able to operate at high or low pressure, with hot or cold water. Write GOLDEN ANDERSON VALVE SPECIALTY CO., 1200 RIDGE AVE., PITTSBURGH 33, PA.

Water Works Hydrants, Valves

316 Included in the extensive line of Ludlow & Rensselaer water-works products for municipal services are fire hydrants, hose valves, check valves, tapping sleeves and valves, sluice gates and valve boxes. For details on the complete line, write LUDLOW VALVE MFG. CO., TROY, N. Y.

Determines Vehicle Speeds

317 Determination of vehicle speed patterns is requisite to setting realistic speed zones on streets and highways. The Electro-Matic Radar Speed Meter does this with precision and accuracy. *Bulletin* R-112 gives full facts. Write AUTOMATIC SIGNAL DIVISION, EASTERN INDUSTRIES, INC., NORWALK, CONN.

Centrifugal Pumps

318 *Bulletin* 1002 is concerned with single stage single and double suction pumps in the De Laval line. It gives head capacity range and dimension data, discusses design and mechanical features, and other pertinent facts. For a copy, write DE LAVAL STEAM TURBINE CO., 866 NOTTINGHAM WAY, TRENTON 2, N. J.

For Proper Lawn Care

319 New sprinklers and valves, designed to deliver effective water coverage patterns for lawn areas are described in current literature, available from BUCKNER MFG. CO., P. O. BOX 232 FRESNO, CALIF. Also ask about technical irrigation planning services and layouts for sprinkler systems.

New Swing-Type Check Valves

320 . . . have heavy-duty disc assembly, are designed for repeated opening and closing applications in water works pumping stations, water filtration plants and sewage treatment, and can be installed horizontally or vertically on water or oil lines. For specifications, write MUELLER CO., DECATUR, ILL.

Weeds Keep Off

321 The makers of SS Weed-Killer, a potent soil-sterilant that prevents unwanted plant life from getting started, has published an up-to-the-minute booklet on weed control. For a copy, write C. B. DOLGE CO., WESTPORT, CONN.

Don't Worry About Power Failures

322 . . . in water, sewage and fire installations when Redi-Torq is on the job. This combination right angle gear drive with automatic clutch eliminates manual switch-over to engine drive in case of power failure (15 to 200 hp; solid or hollow shafts available). For engineering catalogs, write JOHNSON GEAR & MFG. CO., LTD., 8TH and PARKER STS., BERKELEY 10, CALIF.

Paint Specification Folder

323 MC56P16 is the designation for a 4-page illustrated folder on "Paint Specifications for Sewage and Water Treatment Plants," which can be obtained from THE SHERWIN-WILLIAMS CO., 101 PROSPECT AVE. N.W., CLEVELAND 1, OHIO.

Unusual Refuse Incinerator

324 This incinerator is helping Whitemarsh, Pa., achieve economical sanitary and convenient refuse disposal. A few of its special features include continuous flow design, water wall furnace, wet scrubber and residue disposal system. or full facts, write DRAVO CORPORATION, PITTSBURGH 22, PA.

(See page 68 for more Bulletins)

The Importance of People

The future of U. S. water supplies rests largely with the American public. The knowledge of the hydraulic engineer, the skill of the operating mechanic, the craftsmanship of the manufacturer who makes water works supplies – these can function only as authorized to do so by the general public. Water works have become mostly public utilities. Water works improvements are therefore done with public funds, and it is the people who say yes or no.

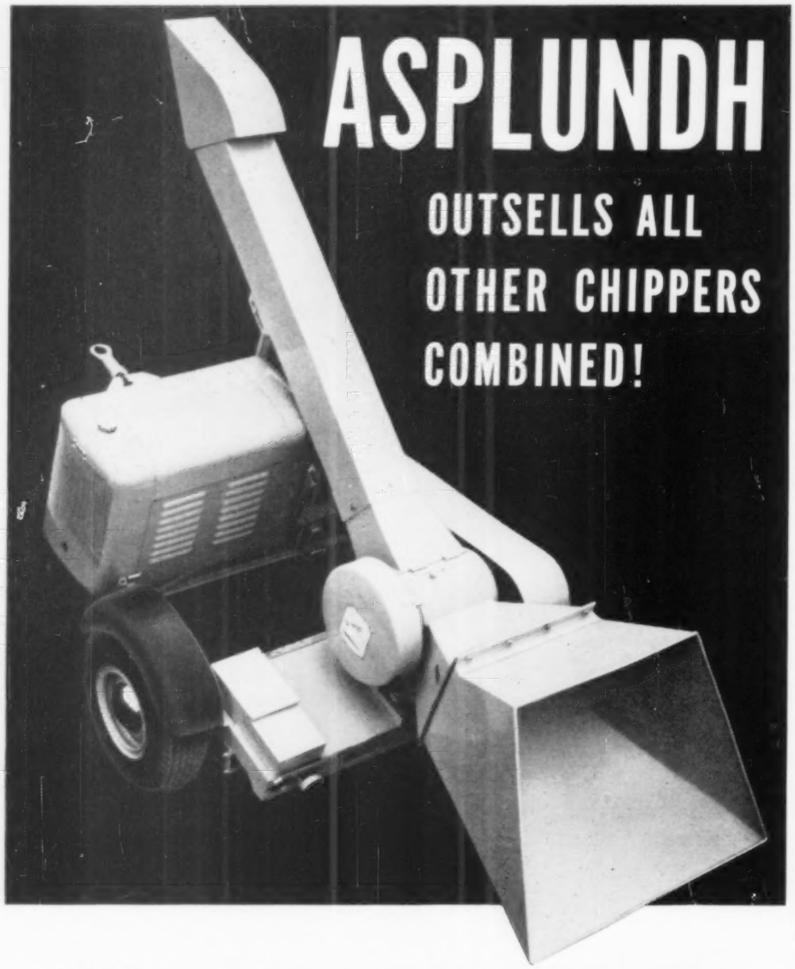
Perhaps the greatest handicap in development of water supplies for over three-quarters of a century is the public opinion that water is cheap, simply because in pioneer days well water and spring water were free. This popular misconception has kept water rates too low to finance improvements as needed. Result: A 30-year-period of delay and a $41 billion deficit in funds for water works and sewage works construction needed to meet today's requirements.

"Where there is no vision, the people perish," says an Old Testament Proverb. The first and the biggest job of water works men and city officials now is to inspire vision in the people of their community. Once they know the facts, the people will act for their own welfare.

This series is an attempt to put into words some appreciation of the water works men of the United States.

M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

SUBSIDIARY OF W WALWORTH



ASPLUNDH

OUTSELLS ALL OTHER CHIPPERS COMBINED!

WHY? . . . because only ASPLUNDH gives you . . .

Fastest Chipping Action
—by actual test, it's the fastest chipper made.

Minimum Maintenance
—simpler design and fewer moving parts than any other chipper. Means less down time.

Absolute Safety
—blades are tapered and wedged.

Bulk Feeding Area
—permits larger bulk and larger limbs . . . up to 6″ diameter.

Quick Blade Change
—easy access and simplicity of service.

Telescoping Draw Bar
—couples quickly and easily to various towing vehicles.

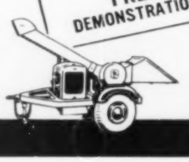
Easy Towing
—lower center of gravity, perfect tracking.

Your ASPLUNDH dealer will welcome a side-by-side performance test. Compare—point by point—and you'll see why buyers prefer ASPLUNDH CHIPPERS 4 to 1.

Write today for complete information. Ask for prompt, FREE DEMONSTRATION.

ASPLUNDH CHIPPER COMPANY
501 York Road, Jenkintown, Pa.

By Actual Test the Fastest Chipper Made



FREE catalogs

Write to address given or circle corresponding number on free post card on page 55.

Box and Valve Locator

325 Model 620T is the designation for a new portable, transistorized unit that locates valves, manhole covers, valve risers, meters and curb boxes, and combines moderate price with high sensitivity, rugged construction and light weight. For further details, write GOLDAK CO., INC., 1544 W. GLENOAKS BLVD., GLENDALE, CALIF.

Inverted Key Curb Stop

326 Combined cap and tee handle inverted key curb stop 4717 is available in sizes ranging from ½ through 2 inches. It is just one product presented in a complete line catalog of water works brass goods, available from A. Y. McDONALD MFG. CO., DEPT. AC-560, 12TH & PINE, DUBUQUE, IA.

Measures Trickles to Torrents

327 The magnetic flowmeter described in *Catalog* 10D1416 is especially suited for difficult liquids such as waste sludges, slurries and sewage. It transmits a linear signal proportional to the volumetric rate of flow to accuracies of ± 1% or greater. For full facts. Write FISCHER & PORTER CO., HATBORO, PA.

For Better Sewage Purification

328 *Manual* 160 illustrates and describes up-to-date processes and equipment for sewage and industrial waste treatment. Included are: activated sludge process, screening, grit removal, pre-treatment, sedimentation, trickling filters and sewage and sludge pumping. Write THE AMERICAN WELL WORKS, AURORA, ILL.

Protect Important Documents

329 This handy guide suggests uses for the desk-top Apeco "Ply-On" laminator, which preserves and protects important business papers by sealing them in tough, yet pliable plastic film. For a copy. Write AMERICAN PHOTOCOPY EQUIPMENT CO., 2100 DEMPSTER ST., EVANSTON, ILL.

Lowers Vehicle Fleet Costs

330 Case histories attest to the fact that The Lark lowers vehicle fleet costs all around—initially, operating, maintenance, repair, insurance. And as many as 263 city and county governments employ The Lark for very kind of vehicle fleet use. For informative literature, write FLEET SALES DIVISION, STUDEBAKER-PACKARD CORP., SOUTH BEND 27, IND.

Coagulant Aids

331 *Bulletin* HSP-919 describes these aids, illustrates their various applications and points out how they can improve coagulation and sedimentation in municipal and industrial water plants and waste treatment plants. Write HAGAN CHEMICALS & CONTROLS, HALL LABORATORIES, PITTSBURGH 30, PA.

New Sluice Gates Catalog

332 . . . being prepared by RODNEY HUNT MACHINE CO., ORANGE, MASS., will also include auxiliary equipment and data of interest to water and sewage control engineers. Those directly concerned with the design and specification of water control equipment may submit requests on company letterhead.

(See page 70 for more Bulletins)

RUST-OLEUM
STOPS RUST!®

and beautifies as it protects in many attractive

COLORS

RUST-OLEUM
STOPS RUST
769
DAMP-PROOF RED PRIMER

Distinctive as your own fingerprint. Accept no substitute.

Why let rust mar your park and playground equipment? Rust-Oleum *Stops Rust!* – and beautifies swings, slides, merry-go-rounds, fences, receptacles, buildings, power equipment, etc. Easy to apply by brush or spray, and dries to a firm, decorative coating that resists sun, moisture, heat, fumes, rain, snow, and weathering! Your nearby Rust-Oleum distributor maintains complete Rust-Oleum stocks in all colors for prompt delivery. Clip coupon to your letterhead for complete information and FREE TEST SAMPLE of Rust-Oleum 769 Damp-Proof Red Primer, *today!*

ATTACH COUPON TO YOUR LETTERHEAD FOR FREE TEST SAMPLE

RUST-OLEUM CORPORATION
2653 Oakton Street—Evanston, Illinois

Gentlemen: Please send me a FREE TEST SAMPLE of Rust-Oleum 769 Damp-Proof Red Primer for application over sound rusted surfaces and complete information on the following.

☐ New 38-page catalog featuring Rust-Oleum "New Color Horizons" System.
☐ 30-page Technical Report on Rust-Oleum fish oil vehicle penetration through rust to bare metal.
☐ Nearest source of supply.

YOU NEED *These catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Miniature Two-way Radio System

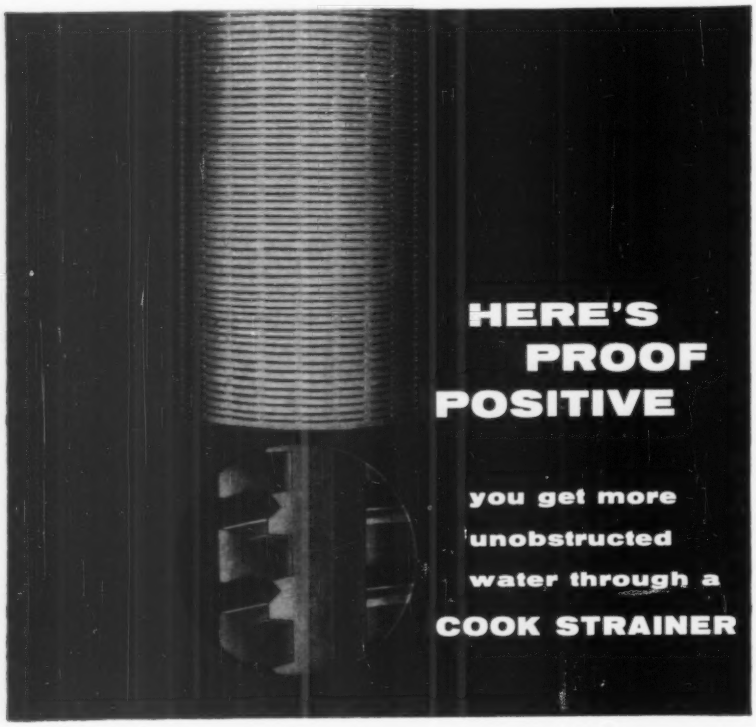
333 . . . designed for short range communications, uses a transistorized transmitter receiver unit powered by self-contained batteries. It's called Telepath and is finding use at airports, parking lots, parks, jails, CD and rescue operations, by police and fire departments. For descriptive bulletin, write SEISCOR BOX 1590, TULSA, OKLA.

Horizontal Earth Augur

334 Water-cooled bits of this earth-boring device rip swiftly through tough roots and hard formation to open hole for pipe installation or soil drainage. Boring is straight, accurate, fast and inexpensive. For facts and specification booklet giving earth boring speeds, write HYDRAUGER CORP., LTD., 681 MARKET ST., SAN FRANCISCO 5, CALIF.

Heavy Grease Loads No Problem Here

335 A Dorr-Vacuator saved the day and a great deal of expense for the Lincoln, Ill., sewage treatment plant by being able to handle heavy grease loads. *Bulletin* No. 6031 gives full facts on this equipment. Write DORR-OLIVER INCORPORATED, STANFORD, CONN.



Cook's exclusive V-shaped slot construction permits the most direct water way from the water bearing strata to the well. This time-tested and proven design allows for maximum development of your well by removing silt, alluvium, clay, and fine sand from around the outside of the strainer, thus providing a natural filter of coarser and uniform sand and gravel.

Why not investigate all the advantages of Cook Strainers? They are available in Red Brass, Silicon Bronze, Armco Iron, or Stainless Steel; in as many different slot sizes as required. Eight to twenty-four hours delivery often possible by telephoning Cincinnati HUmboldt 1-8800.

COOK WELL STRAINER CO.
6330 Glenway Avenue • Cincinnati 11, Ohio
WORLD'S LEADING NAME IN WELL STRAINERS

Improve Your Sewage Settling Tanks

336 . . . with a long pitch pintle chain on the sludge-collection scrapers. These rugged units are proportioned to give maximum strength with minimum weight, and are available in malleable, Promal, or special analysis metal having special corrosion resistance. For complete information, write MOLINE MALLEABLE IRON CO., ST. CHARLES, ILL.

For Better Sewers and Drains

337 LINE MATERIAL INDUSTRIES, FIBRE PRODUCTS DIVISION, MILWAUKEE 1, WIS., makes available full facts on Permaline Bituminous fibre fittings and pipe, available in sizes of 2 to 8 inches in lengths of 5, 8 and 10 feet, and carrying a 50-year guarantee.

New Line of Sewer Cleaning Equipment

338 . . . announced by TURBINE SEWER MACHINE CO., 1303 N. FOURTH ST., MILWAUKEE 12, WIS., includes the new type GK Go-Getter self-propelling sewer cleaning nozzle, which has three cutting blades and wear ring and can be used on 2- or 2½-inch fire hose.

Large Volume Diatomite Water Filters

339 These filters produce water of highest clarity, with reduced bacteria count and with uniform quality. Their installation for municipal water supply has been successful, and in swimming pool installations make possible reduced chemical treatment. Bulletins and engineering data can be obtained from SPARKLER MFG. CO., CONROE, TEXAS.

File and Find with Zip

340 Capacity, ease and speed of finding and filing, and mobility make this new rotary file different from old-style files. For details and descriptive literature, write DEPT. AC-560, REVO-FILE SYSTEMS DIV., THE MOSLER SAFE CO., NEW YORK 1, N. Y.

"Priceless Water" Promotion Folder

341 . . . describes the general purposes of the Priceless Water campaign of the American Water Works Association, and gives questions and answers outlining the value of painting the term on elevated water storage tanks. Written for the Water Utility Manager, it is available from JOHNS-MANVILLE, 22 E. 40TH ST., NEW YORK 16, N. Y.

Pumps for Municipal Service

342 There's an F-M pump to meet just about every municipal pumping need: nonclog sewage and trash pumps, angle flow pumps for dry or wet pit service; turbine pumps, single and multi-stage centrifugals for booster stations, and fire pumps. For details, write FAIRBANKS, MORSE, PUMP AND HYDRAULIC DIVISION, KANSAS CITY, KANS.

They Register Water Use

343 The Watch Dog line of water meters include disc, compound and turbine meters, in various styles, sizes and models. The M-975 Series of *Bulletins*—B40, B41, B42A, B43A, B-44 and B34B—give details, application and specifications. Write GAMON METER DIVISION, WORTHINGTON CORPORATION, 296 SOUTH ST., NEWARK 5, N. J.

(See page 72 for more Bulletins)

Sanitary landfill cost cut 25% with "Spot-Turn" OLIVER OC-46

OLIVER
OC-4
CRAWLER

Absecon, New Jersey, keeps a sharp eye on the cost of its sanitary landfill operation. That's why this town is happy it bought an OC-46 "Spot-Turn" loader. The facts prove that a 25% saving is realized using the OC-46 versus the former method of hiring an outside contractor.

"'Spot-Turn' is the feature that saves us time and money," says George Gillespie, city councilman in charge of Streets and Roads Dept. The close-quarter maneuverability with shortest turn-around radius of the OC-46, plus its higher measure of diesel power, makes quick work of compacting and covering refuse. And the time saved by the OC-46 lets Absecon put it to work loading trucks for street and road maintenance, thereby gaining further savings.

Why not see... try the OC-46 yourself. It's the compact, big-job tackler that's sized right for city and township work—and lowest in its class for price!

Here's the catalog that's required reading for budget-minded cities: the OC-4 bulletin. It's heavy on job-application pictures and data—shows the OC-46 tooled-up with work-speeding, cost-saving equipment attachments. Ask us for your copy.

LOOK TO OLIVER FOR YOUR BEST BUY IN WHEEL AND CRAWLER TRACTORS

THE OLIVER CORPORATION
Dept. 2232, 400 W. Madison St., Chicago 6, Ill.

A Symbol of Quality
FOR
WATER
SERVICE
PRODUCTS

HAYS®

MODEL B
TAPPING
MACHINE

TAPPING
MACHINES

One of a
complete line of
Water Service
Products

GENERAL PRODUCTS DIVISION
HAYS MFG. CO.
ERIE, PA.

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 55.

Attachments for Cat Graders and Tractors

344 *Forms* 505, 506 and 507—catalog sheets from RIVINIUS, INC., EUREKA, ILL., respectively, describe on a torque steering booster for all Caterpillar motor graders, a hydraulic moldboard shift for Nos. 12, 112 and 14 graders, and low-cost "live" power steering for the D8 tractors.

Low-Cost Bead Dispenser

345 Here's a unit that will help you with your traffic line striping problems. It fits all striping machines, operates automatically or manually, and dispenses beads in any given quantity at any given speed. For full facts, write FLEX-O-LITE MFG. CORP., 8301 FLEX-O-LITE DRIVE, P. O. BOX 3066 (AFFTON BRANCH), ST. LOUIS 23, MO.

Practical Safety Barrier

346 . . . quickly extends to full length (4, 6 or 8 feet), yet collapses to just inches for easy storage in a fibreboard box that can serve as a carrying case. It is made of steel and features reflectorized traffic-yellow cross bars. For full facts on Guard-Gate, write WEST SIDE IRON WORKS, INC., DEPT. MI, 327 FRONT AVE. N.W., GRAND RAPIDS 1, MICH.

Adult Mosquito Control

347 In a discussion on the control of mosquitoes with Lethane 384, *Technical Bulletin* SAN-454 states the primary objective of mosquito control, gives facts about Lethane, application methods, formulation and other general information. For a copy, write ROHM & HAAS CO., AGRICULTURAL AND SANITARY CHEMICALS DEPT., WASHINGTON SQ., PHILADELPHIA 5, PA.

Turn Street Lights on Automatically

348 New photoelectric cover plate switches by Protect-O-Lite automatically turn lights on at dusk and off at dawn. They feature a time delay—up to 3 minutes—and fit standard outlet boxes for operating incandescent, fluorescent, neon or mecury vapor lighting fixtures. Write ENERGY KONTROLS, INC., GENEVA, ILL.

Drill Through Reinforced Concrete

349 . . . brick, terrazzo and tile quickly, quietly and efficiently and save up to 70%. The new low-cost Model "S" portable diamond drilling machine makes it possible. For fact-filled catalog, write TRUCO MASONRY DRILLING DIVISION, WHEEL TRUEING TOOL CO., 140-3200 W. DAVISON, DETROIT 38, MICH.

These Gate Valves Function Well Under Extra Severe Conditions

350 When your water or sewage systems need valves for extra-severe service duty, the Smith Square-Bottom Throttle-Construction Valves are your answer. They can throttle the flow by opening slightly. You can operate them daily against high unbalanced pressures. You can install them in a flat position in vertical piping and get excellent service. For details, write to A. P. SMITH MFG. CO., EAST ORANGE, N. J.

Municipal Data Processing

351 Data processing was used at Squaw Valley to flash results of each event. This was made possible by the ability of the IBM Ramac to process information in the order received. This speed, detail and economy are finding valuable application in the municipal field. Write INTERNATIONAL BUSINESS MACHINES, 590 MADISON AVE., NEW YORK, N. Y.

Flood Light for Security

352 Type PLB Fresnel floodlights discourage intruders. They combine wide horizontal beam spread with narrow vertical beam spread. Each floodlight is mounted on a pole 30 feet from the fence, and beam patterns overlap. For explanatory literature, write CROUSE-HINDS CO., SYRACUSE 1, N. Y.

Designed for Heavy-Duty Grade Mowing

353 The new Devere TR series rotary mower is designed for use on terrain where grades and ground angles make mowing troublesome and difficult. It is available in 37-inch, 48-inch and 60-inch widths, with variable speed drive from 2 to 6 mph, and with one reverse independent of cutting unit. For literature, write THE DEVERE CO., RACINE, WIS.

105/35 mm Camera

354 The only combination camera-projector to utilize both 35 and 105mm film is described in a 4-page bulletin, entitled "Big News in Miniaturization." For a copy, write MICRO-MASTER, KEUFFEL & ESSER CO., DEPT. AC-5 THIRD & ADAMS STS., HOBOKEN, N. J.

Truck-Mounted Backhoe

355 The new HY-HOE 250 mounts on any 2-ton truck and is said to be the only truck-mounted hoe in its size-and-weight class to offer full ⅜-yard struck capacity. For full story, write HYDRAULIC MACHINERY CO., WAUKESHA, WIS.

Don't Waste that Digester Gas

356 Digester gas from sewage purification is a valuable fuel that can help cut treatment costs. Gas holders for the recovery of this gas for fuel is the subject of a current catalog available from R. D. COLE MANUFACTURING CO., NEWNAN, GA., fabricator of elevated water storage tanks and pressure vessels.

Disc Water Meters

357 Latest bulletins from ROCKWELL MFG. CO., DEPT. 401WD, PITTSBURGH 8, PA., will tell you of the engineering advances incorporated in the design of the company's Arctic and Tropic disc meters.

Recondition Water Mains In Place

358 Illustrated literature from CENTRILINE CORP., 140 CEDAR ST., NEW YORK 6, N. Y., details a process of lining 4" to 144" pipe in place by centrifugal application and automatic troweling of cement mortar.

Large Water Transmission Mains?

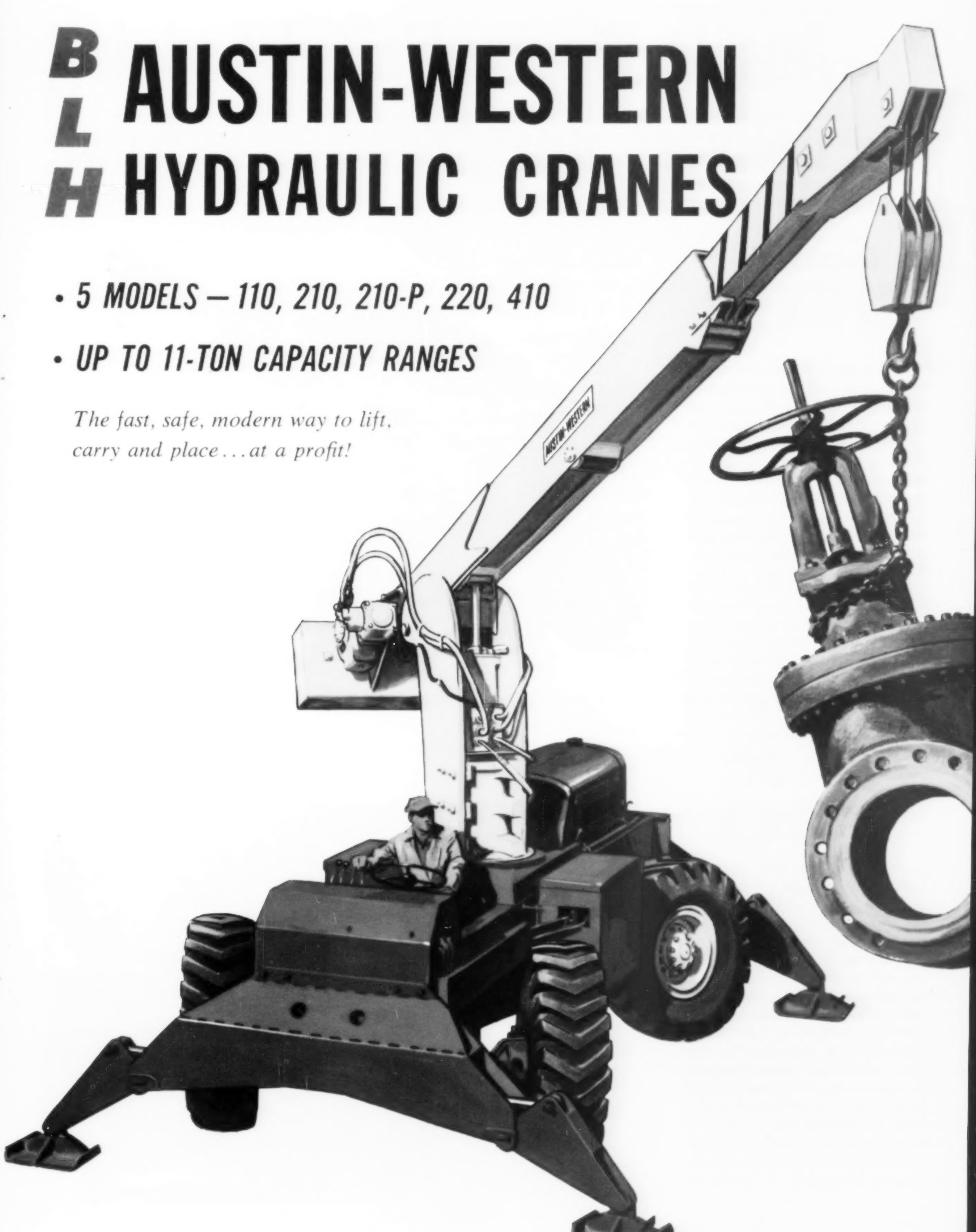
359 If you are planning for some, then you'll be interested in obtaining the latest steel pipe brochure, published by STEEL PLATE FABRICATORS ASSOCIATION, 105 W. MADISON ST., CHICAGO 2, ILL. It describes inherent qualities of fabricated steel pipe in terms of strength, tightness, elasticity, economy, long life.

(See page 88 for more Bulletins)

B AUSTIN-WESTERN
L
H HYDRAULIC CRANES

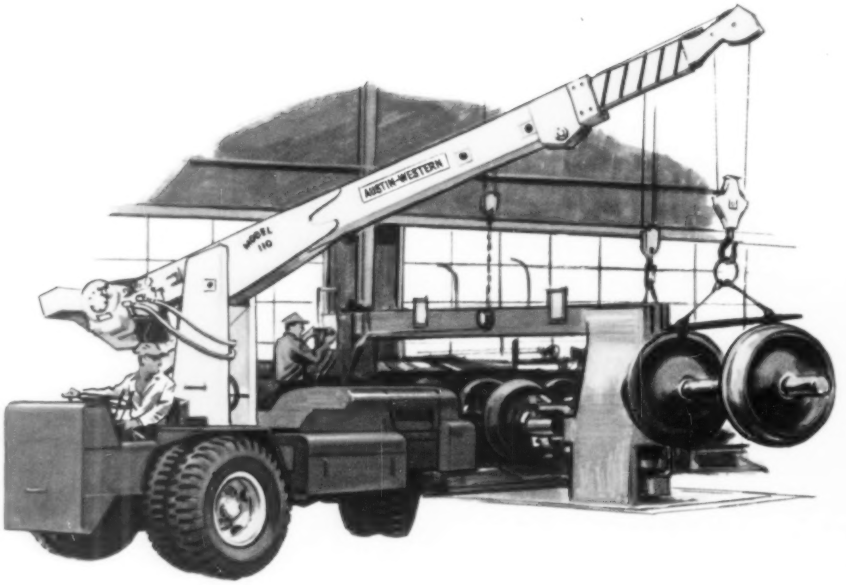
- *5 MODELS — 110, 210, 210-P, 220, 410*
- *UP TO 11-TON CAPACITY RANGES*

The fast, safe, modern way to lift, carry and place . . . at a profit!



Austin-Western's telescoping delivers unequaled precision,

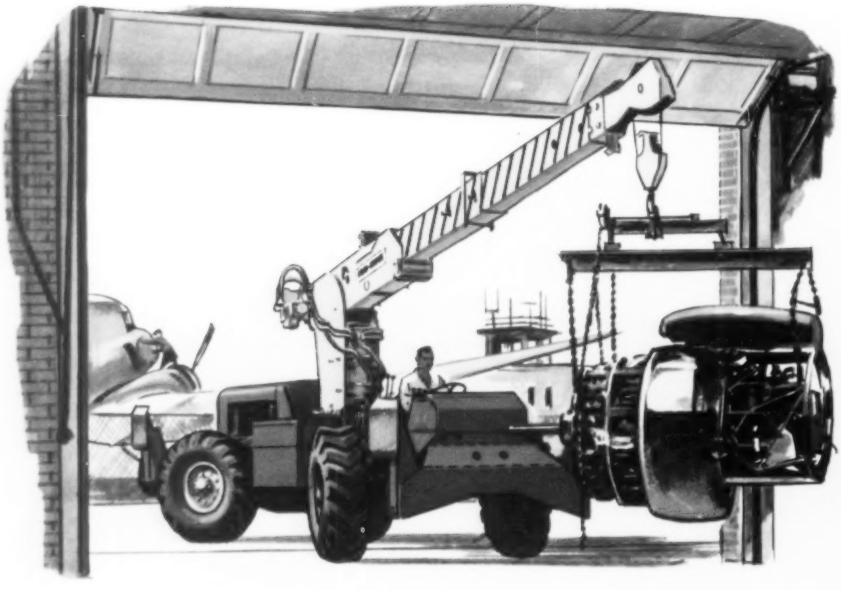
MODEL
110



5-ton range — The 110 is the mighty midget of the A-W line—but what a midget! It'll outlift all other 3-wheel cranes over-the-side! It's industry's answer to fork truck limitations. The 110 has an 18 ft. 7 in. boom reach; 220° boom swing. Low 8 ft. 10 in. overhead clearance. Operates with ease in close quarters; handles loads in 5-ton range.

Features dual front driving wheels; dual tire rear trunnion power steer — road speeds from 2 to 18 mph. Torque converter and full hydraulic reversing mechanism standard. The unit can be tailored to your particular job needs with various combinations of features and equipment.

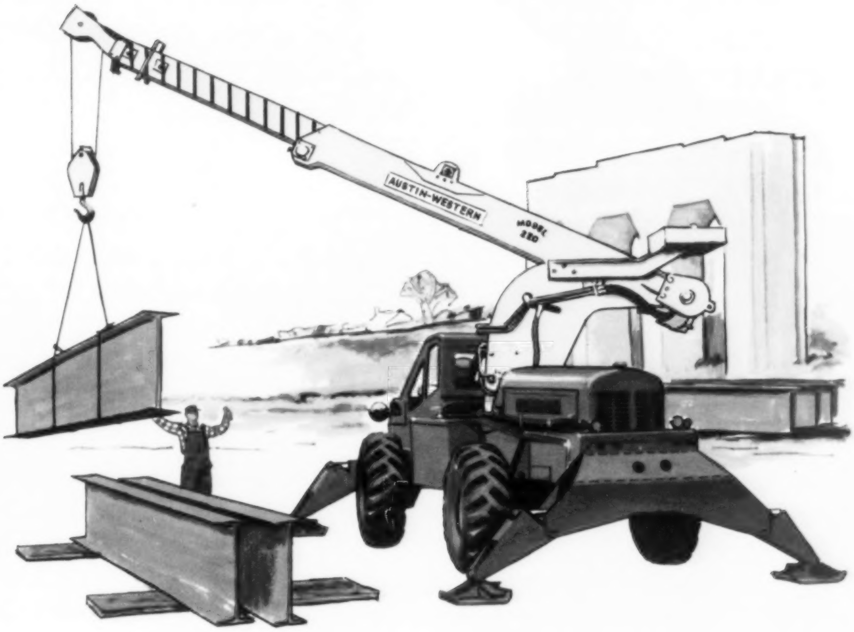
MODEL
210



7-ton range—This basic model of the hydraulic crane line is rubber mounted, self-propelled; capable of road speeds up to 35mph. A real workhorse for an astounding variety of lift, carry and place assignments. 18-foot telescoping boom rotates in continuous full circle, maximum 35-foot boom reach optional. All-wheel steering gives unlimited maneuverability in tightest spots; all-wheel drive means plenty of traction for loaded boom travel on any surface. Low overhead clearance. Operation is fully hydraulic, including outriggers.

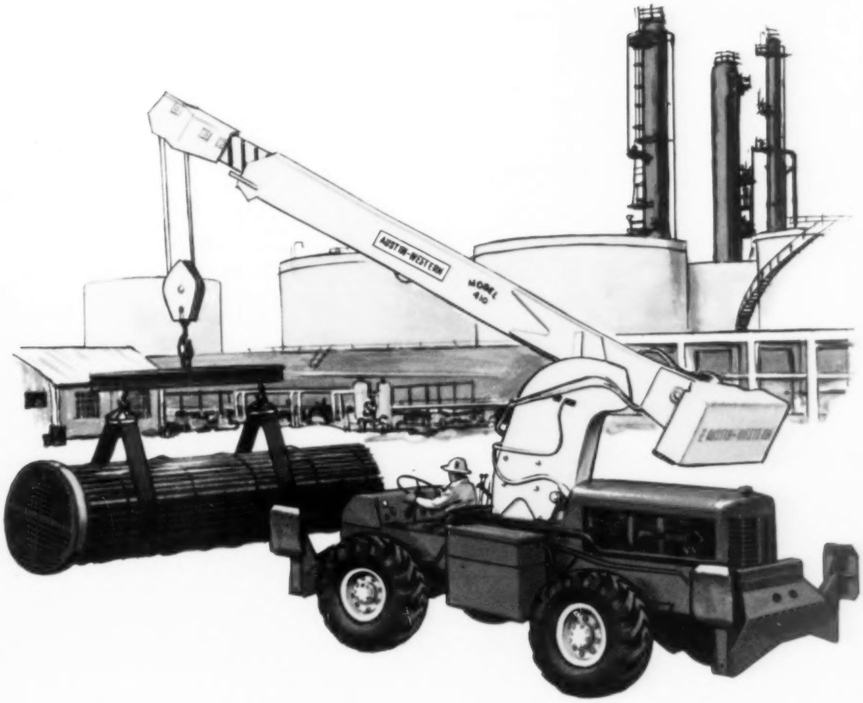
live hydraulic boom safety, flexibility

- *Extends and retracts*
- *Raises and lowers*
- *Reaches up and in*
- *Reaches out and over*
- *Full hydraulic control*
- *Two or more movements with full boom load*
- *Continuous full circle rotation on most models*



MODEL 220

8-ton range—The Model 220 is a modified version of the basic Model 210. Its counterweighted boom as well as heavier structural design give it added lifting capacity into the 8-ton range. Like the 210, it features an 18-ft. telescoping boom, with maximum 35-ft. boom reach optional; continuous full circle swing; all-wheel drive and all-wheel steering. Full hydraulic controls mean tops in precision, safety, ease of operation.



MODEL 410

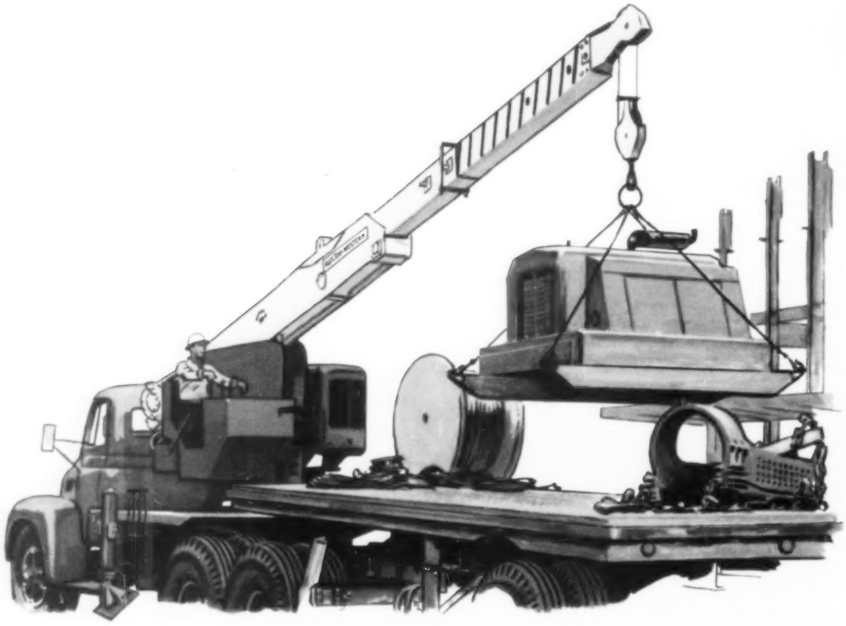
11-ton range — This big brute, the Model 410, is the heavy-duty unit in the A-W crane line. Like the 210 and 220, it is self-propelled; 25-ft. telescoping boom rotates in continuous full circle with maximum 48-ft. boom reach optional; raises to a 60° angle from horizontal.

Gas or diesel power; all-wheel drive and all-wheel steer are available. Travels from job to job at road speeds to 30 mph. This rugged, mobile crane is the rig for you if you need big crane capacity without sacrificing the profitable advantages of flexibility, versatility and mobility inherent in all models of Austin-Western hydraulic cranes.

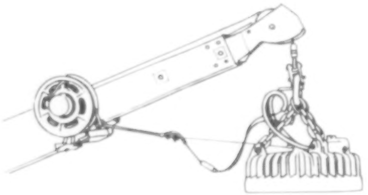
MODEL
210-P

FOR TRUCK OR STATIONARY MOUNTING

7-ton range—The Model 210-P is the famous Austin-Western live 210 hydraulic boom . . . available as a package unit for truck or stationary mounting. Its 18-ft. telescoping boom rotates in a continuous circle; maximum 35-foot boom reach optional; lift capacity is in the 7-ton range. Can't be beat for crane applications requiring a high degree of mobility. This unit, like all other A-W cranes, can be equipped with a wide variety of attachments for extra versatility—such as clamshell, orange peel, maintenance platform, etc.

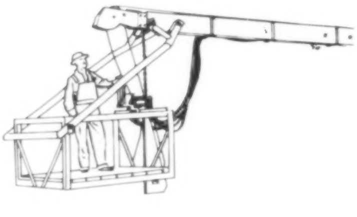


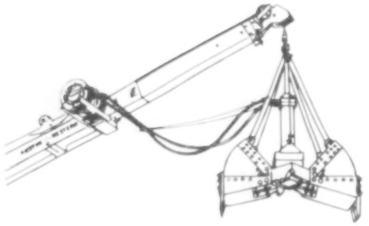
FOR GREATER VERSATILITY—A WIDE CHOICE OF OPTIONAL ATTACHMENTS AND EQUIPMENT



MAGNET

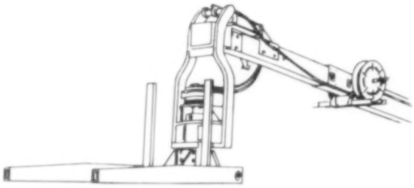
REMOTE
CONTROL
MAINTENANCE
PLATFORM





CLAMSHELL
BUCKET

LIFT FORK



Also available for most models:

- ***Orange Peel Bucket***
- ***Cab***
- ***Snow Plow***
- ***Rail Guide Wheels***
- ***Hydraulic Outriggers***
- ***Power Take-Off***
- ***Load Carrying Platform***
- ***Winch***
- ***Bulldozer Blade***
- ***Manual Boom Extensions***
- ***Pintle Hook***

Learn the facts today about the A-W crane best suited to profitably perform your lift, carry or place requirements!

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON
Power graders • Motor sweepers • Road rollers • Hydraulic cranes

BALDWIN
BLH
LIMA-HAMILTON

AD-2525

PRINTED IN U.S.A.

AT YOUR FINGER TIPS

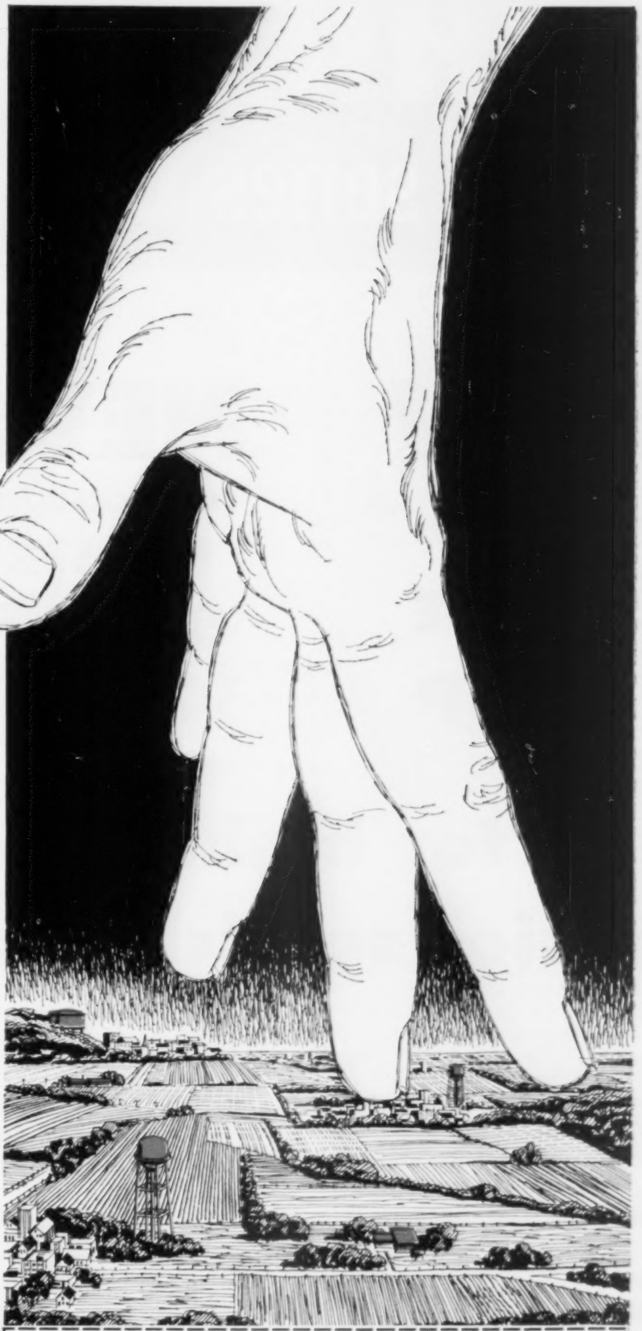
Every key point in your water system —with FEMCO telemetering . . . monitoring . . . remote control

Femco Centralized Monitoring and Control systems "report" meter readings, valve positions, pump conditions, etc. from any point in your water system to your central control station, and enable you to control every operating function from that station.

With this Femco system, any number of monitoring, telemetering and control functions, in any combination, are handled through a single two-wire parallel circuit. Leased telephone wires may be used if desired.

The system is extremely flexible. Applications range from indication and control of a few functions within a single filtration plant to centralized operation of a complete water system covering several hundred square miles. Each application is engineered for the specific job which is required, but the use of standardized components keeps costs low in relation to the savings produced.

All Femco systems are rugged and dependable. Maintenance can be handled by regular employees—no electronics technicians are needed. For more information, just fill out and mail the coupon below to Femco, Inc., Irwin, Pa. A300



Femco

COMMUNICATIONS: Carrier and wired audio systems. **TELEMETERING:** Flows, pressures and other functions. **MONITORING:** Circuit breakers, valves, pumps, compressors, etc. **REMOTE CONTROL:** Pumps, valves, circuit breakers; cranes, or other moving equipment.

Femco, Inc., Irwin, Pa.

I would like to receive a copy of your Bulletin #5903 describing Femco CMC for water systems.

Name______________________________

Title______________________________

Address______________________________

____

WHICH IS BEST

3 new series Cat Motor Graders

NEW

No. 12

Series E

115 HP

NEW

TURBOCHARGED

No. 112

Series F

100 HP

NEW

No. 112

Series E

85 HP

for higher production, easier servicing and long life!

No machine is better than its engine—and the new Cat Diesel Engines in these three new series Motor Graders are better than ever. They're more compact, more rugged and modern in design. They incorporate the latest developments in metallurgy and technology. They provide three important bonuses—greater lugging ability in tough going, easier servicing and long life.

A COMPLETE LINE—85 HP to 150 HP

The new Turbocharged 100 HP No. 112F is designed for high production to match work requirements between the new 85 HP No. 112E and new 115 HP No. 12E. Compared with the 85 HP model, the 100 HP machine delivers 5% higher travel speeds and a 5% increase in blade speed control. With its introduction into the line, Caterpillar now offers you a choice of four Motor Graders in all to meet your specific requirements. The largest is the Turbocharged 150 HP No. 14, the most versatile big grader ever developed.

SEE YOUR CATERPILLAR DEALER

Some of the features of the new Cat Motor Graders are described briefly here. But for the complete picture, see your Caterpillar Dealer. Ask him to show you how they're a better investment for your tax dollars than ever. Take a look under the hoods at the new modern-design engines. Better still, ask for a demonstration. See for yourself how they "pull through" tough going.

Caterpillar Tractor Co., General Offices, Peoria, Ill.

CATERPILLAR

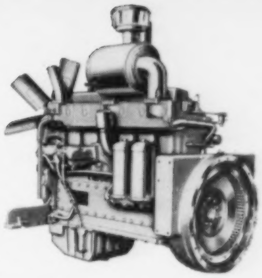
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BEST BUY FOR YOUR TAX DOLLARS

FOR YOUR JOB?

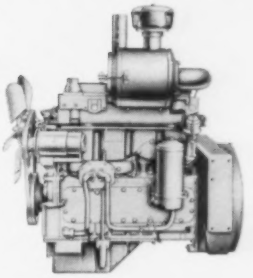
with new compact engines!

New No. 12E Motor Grader
features new compact
115 HP Engine



New No. 112E Motor Grader
features new compact
85 HP Engine

The new No. 112F is similar
in appearance, but features a
Turbocharged 100 HP Engine.

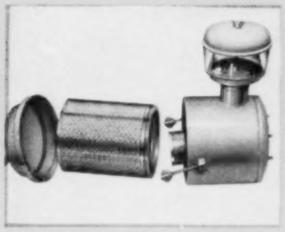


NEW HIGH TORQUE. Though the engines in the new Cat Motor Graders are designed specifically for each machine, they all develop higher torque than previous models and have other basic improvements in common. For example: shorter, stiffer blocks and crankshafts . . . stronger, distortion-resistant cylinder heads . . . improved cooling systems with greater capacity . . . engine lubricating oil conditioning . . . and advanced design fuel systems —new, compact fuel injection pumps with barrel and plunger assemblies in easy-to-service pump housings.

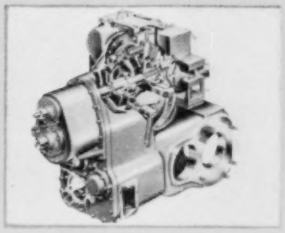
NEW STARTING ENGINE. Now standard is a new two-cylinder, vertical starting engine to replace the horizontal engine. All three Motor Graders use a modern 12-volt electric system. An optional 24-volt system is available for use in moderate climates where direct electric starting is practical.

PERFORMANCE-PROVED FEATURES. While many advances have been designed into the compact new engines, certain time-tested features have been retained. To mention a few: precombustion chamber design that delivers maximum horsepower on heavy, economy-type fuels . . . steel-back aluminum bearings . . . wet-type "Hi-Electro" hardened cylinder liners . . . and aluminum pistons with cast-in ring band.

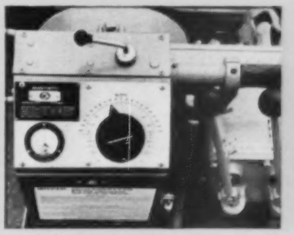
OTHER HIGH-PRODUCTION FEATURES IN CAT MOTOR GRADERS



NEW DRY-TYPE AIR CLEANER (standard) removes a minimum of 99.8% of all dirt from intake air during every service hour. Can be serviced in 5 minutes. Cuts your maintenance time by as much as 70% and substantially reduces maintenance costs. Cleaner air also extends engine life.

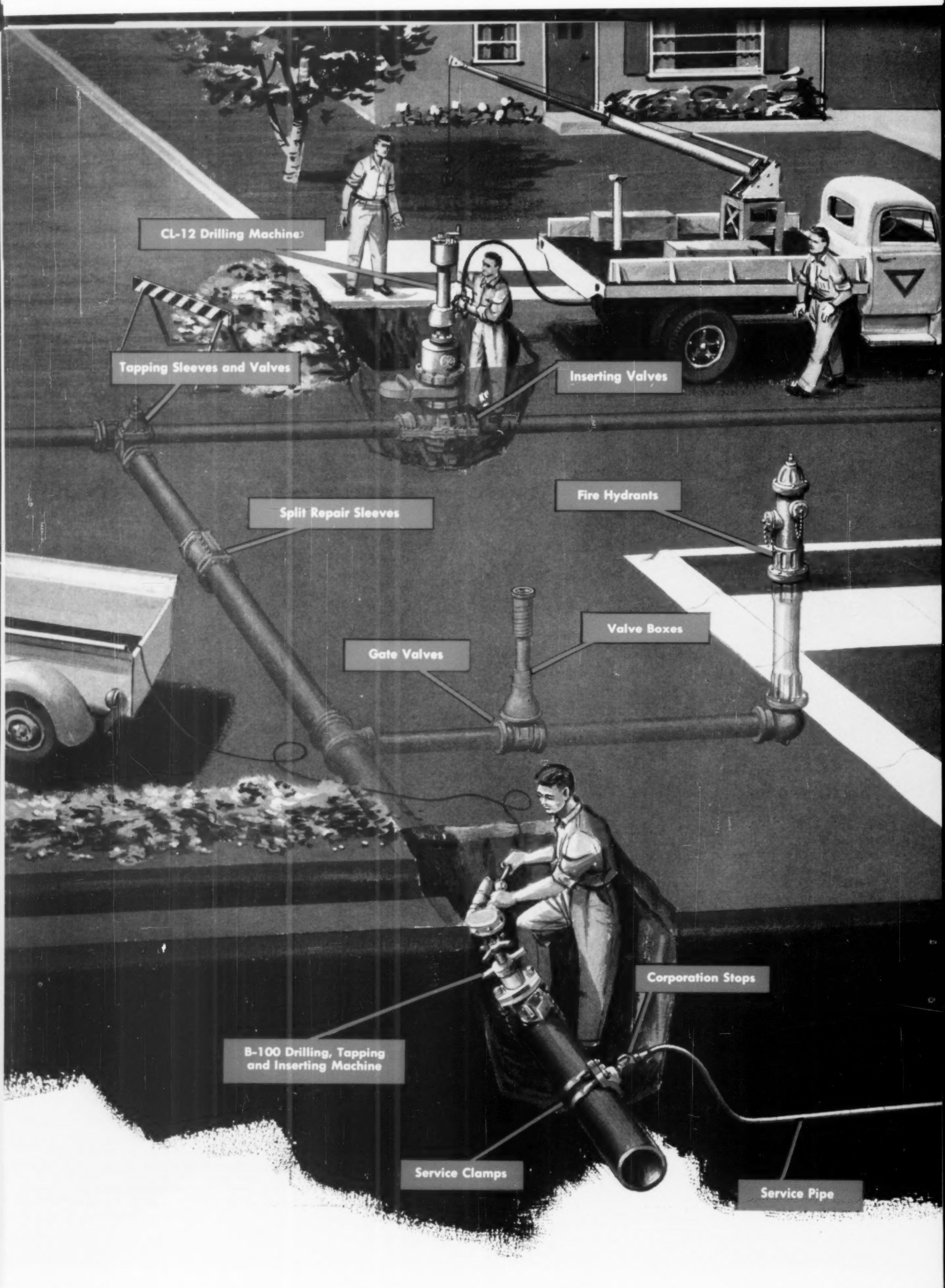


EXCLUSIVE OIL CLUTCH (standard) provides up to 2000 hours service without adjustment, the equivalent of about 12 months of "adjustment-free" operation. A Caterpillar development proved by millions of hours of use, it virtually eliminates down time for clutch repair.



AUTOMATIC BLADE CONTROL (optional) cuts grading time in half. Operator sets desired slope on dial and only has to control depth of cut. Manufactured by Preco Incorporated, the unit automatically maintains blade slope within ⅛" in 10'. Available factory installed.

IN-SEAT STARTING (standard) offers operator finger-tip convenience and positive starts in any weather. Another feature: improved mechanical blade controls provide precise adjustment and ease of engagement. "Anti-creep" lock makes blade stay put under load.


CL-12 Drilling Machine
Tapping Sleeves and Valves
Inserting Valves
Split Repair Sleeves
Fire Hydrants
Valve Boxes
Gate Valves
Corporation Stops
B-100 Drilling, Tapping and Inserting Machine
Service Clamps
Service Pipe

it's MUELLER®

all along the line

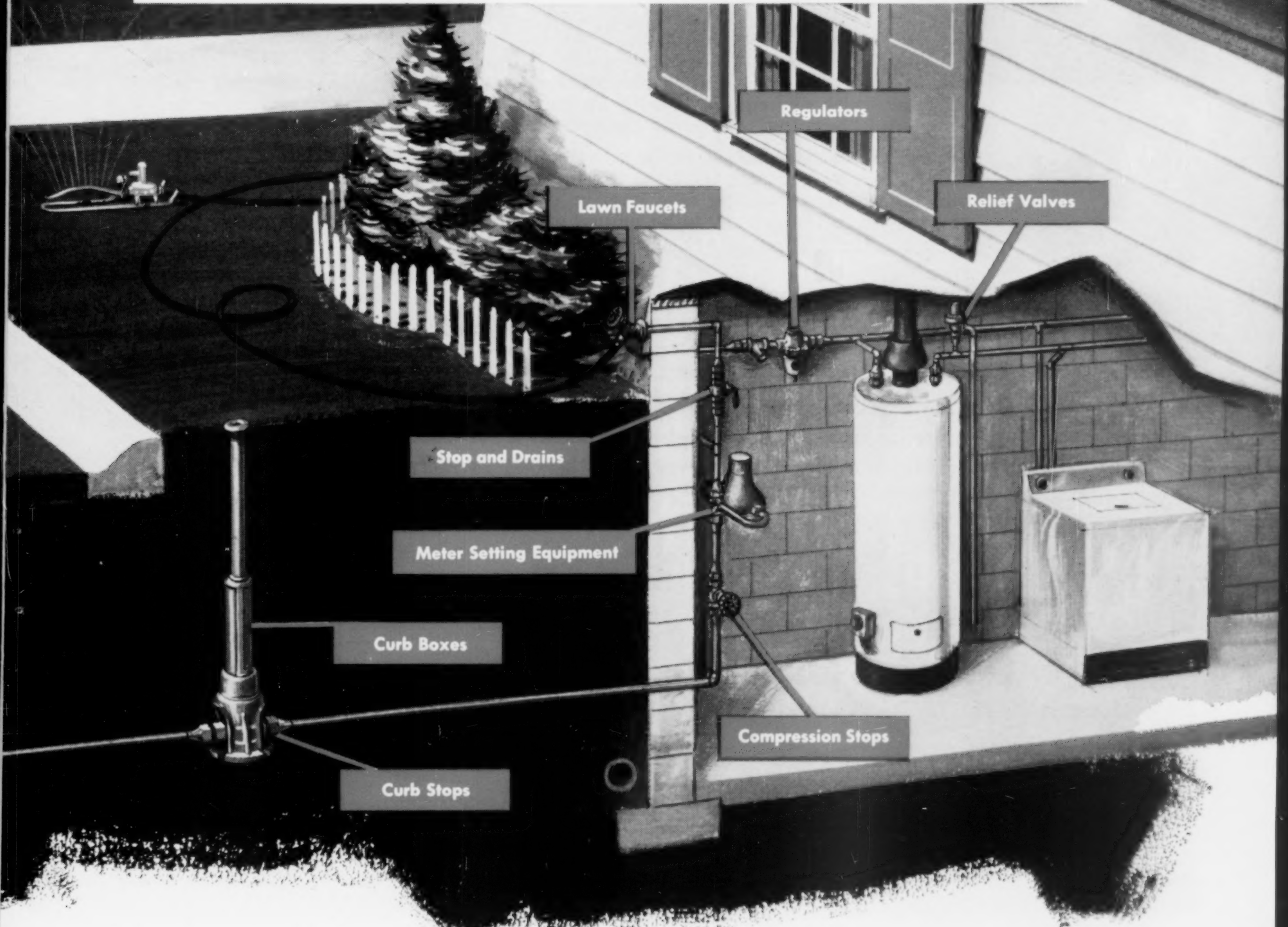
Gain longer, more dependable service with reduced maintenance costs. Insure uniform product quality and reduced costs by utilizing one source of supply.

Specify the complete line of water works products—equipment backed by over a century of manufacturing experience and technical "know how".

Specify Mueller, all along the line.

MUELLER CO. DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles;
In Canada: Mueller, Limited, Sarnia, Ontario



Regulators
Lawn Faucets
Relief Valves
Stop and Drains
Meter Setting Equipment
Curb Boxes
Compression Stops
Curb Stops

DELAWARE COUNTY'S SECOND DISPOSAL PLANT TO BE C-E EQUIPPED

Like the first plant, now in service, it will contain 2 C-E Incinerator Stokers

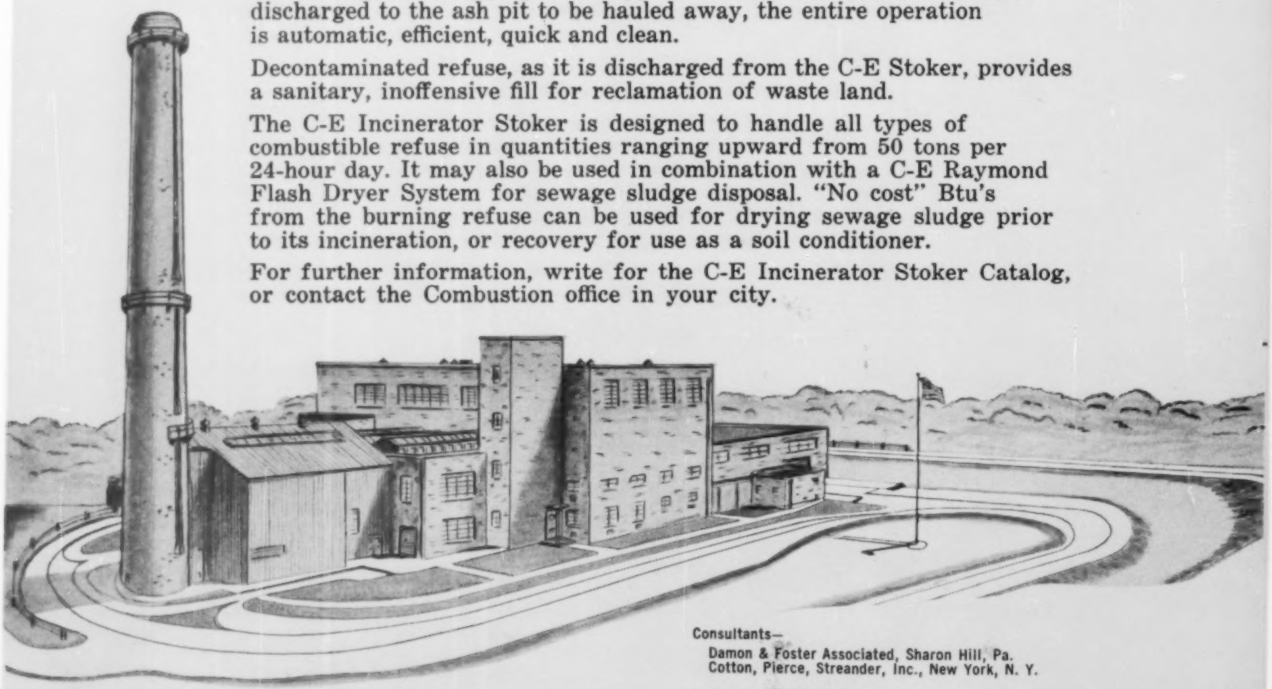
Delaware County, Pa., is effectively solving its refuse disposal problem by developing a highly efficient 3-plant disposal system, each plant capable of incinerating 500 tons of refuse per 24-hour day. The first plant, recently placed in service, contains two C-E Incinerator Stokers, each with a capacity of 250 tons. The second plant, located approximately five miles from the first, is essentially a duplicate installation and will contain two C-E Incinerator Stokers of comparable capacity. All four units are equipped with an inclined "drying" stoker and a horizontal "burning" stoker of the traveling grate type.

Delaware County's choice of "continuous processing" is a matter of sound economics. From the time the refuse is deposited into the self-sealing, non-clogging feed hopper, until the incinerated residue is discharged to the ash pit to be hauled away, the entire operation is automatic, efficient, quick and clean.

Decontaminated refuse, as it is discharged from the C-E Stoker, provides a sanitary, inoffensive fill for reclamation of waste land.

The C-E Incinerator Stoker is designed to handle all types of combustible refuse in quantities ranging upward from 50 tons per 24-hour day. It may also be used in combination with a C-E Raymond Flash Dryer System for sewage sludge disposal. "No cost" Btu's from the burning refuse can be used for drying sewage sludge prior to its incineration, or recovery for use as a soil conditioner.

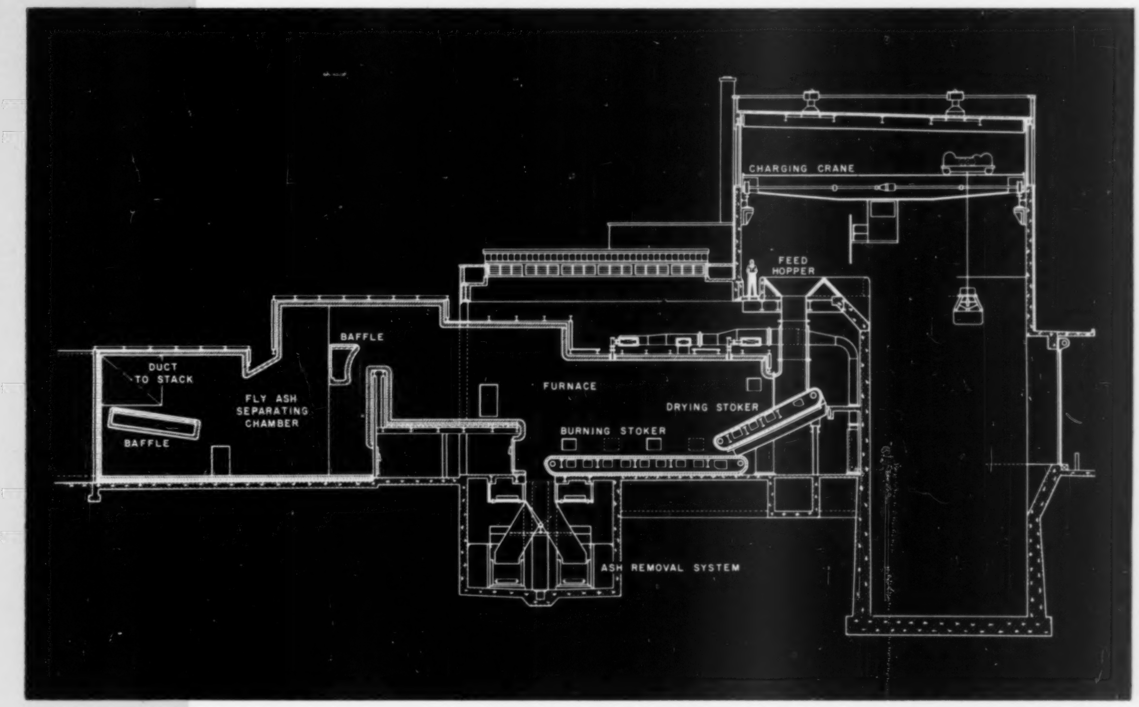
For further information, write for the C-E Incinerator Stoker Catalog, or contact the Combustion office in your city.



Consultants—
Damon & Foster Associated, Sharon Hill, Pa.
Cotton, Pierce, Streander, Inc., New York, N. Y.

Incinerator Contractor—
Nichols Engineering and Research Corp., New York, N. Y.—Plant #1.
Morse Boulger, Inc., New York, N. Y.—Plant #2.

General arrangements of the first Delaware County Incinerator Plant. Architect's rendering of this plant appears on opposite page.



HIGHLIGHTS OF C-E DESIGN

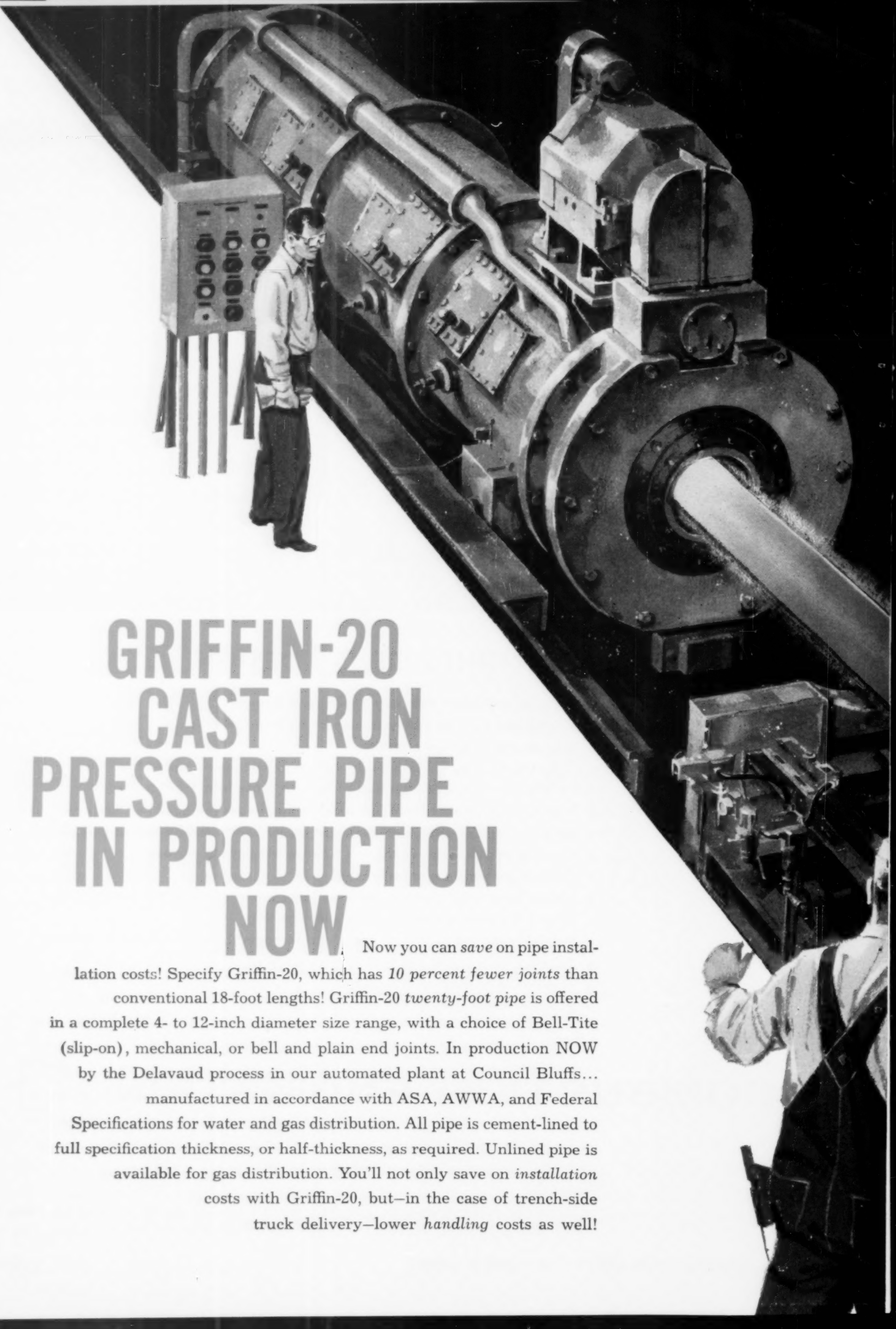
- Requires less labor than any other burning method.
- Easy to operate—no heavy stoking or cleaning of fires.
- Assures maximum availability.
- Large hopper and chute provide sealed, continuous supply of refuse.
- Continuous, automatic burning of fuel on grate from front to rear.
- Zone control of air to fuel bed assures maximum combustion efficiency.
- Ratio of overfire and undergrate air easily controlled by use of dampers.
- Continuous discharge of residue from moving grate surface.
- Easily replaceable grate elements.
- Special heat resisting iron—most suitable material—used for grate surface.
- Wide keys over driving chains prevent fouling.
- Steel driving chains, below grate and removed from heat, take all tension.
- Take-up mechanism easily accessible at front.
- Applicable to largest incinerators.
- Provides most economical method of disposal.

COMBUSTION ENGINEERING

C-270

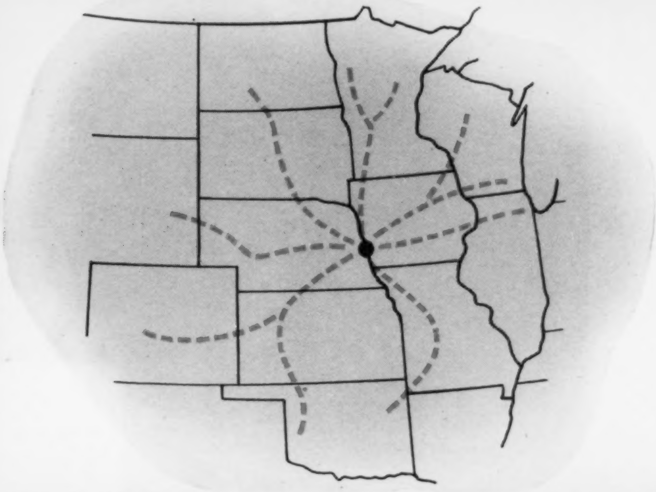
Combustion Engineering Building, 200 Madison Avenue, New York 16, N. Y.
CANADA: Combustion Engineering-Superheater Ltd.

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE



GRIFFIN-20 CAST IRON PRESSURE PIPE IN PRODUCTION NOW

Now you can *save* on pipe installation costs! Specify Griffin-20, which has *10 percent fewer joints* than conventional 18-foot lengths! Griffin-20 *twenty-foot pipe* is offered in a complete 4- to 12-inch diameter size range, with a choice of Bell-Tite (slip-on), mechanical, or bell and plain end joints. In production NOW by the Delavaud process in our automated plant at Council Bluffs... manufactured in accordance with ASA, AWWA, and Federal Specifications for water and gas distribution. All pipe is cement-lined to full specification thickness, or half-thickness, as required. Unlined pipe is available for gas distribution. You'll not only save on *installation* costs with Griffin-20, but—in the case of trench-side truck delivery—lower *handling* costs as well!



Strategically located to effect savings in shipment *time* and *money*, the Griffin-20 Council Bluffs plant (95,000 square feet of buildings on 19 acres of land) is at the *transportation hub* of the Plains States. Pipe shipments reach their destinations in record time because the site is served by nine major railroad carriers, in addition to truck carriers. *For the first time, many areas can receive truck delivery alongside trench.* Griffin-20's Council Bluffs plant is the *logical* source for cast iron pressure pipe users throughout the Midwest and Rocky Mountain states.

GRIFFIN PIPE DIVISION

Griffin Wheel Company · Council Bluffs, Iowa

SALES OFFICES: Chicago · St. Paul · Kansas City, Kansas · Denver

GRIFFIN PIPE DIVISION COUNCIL BLUFFS

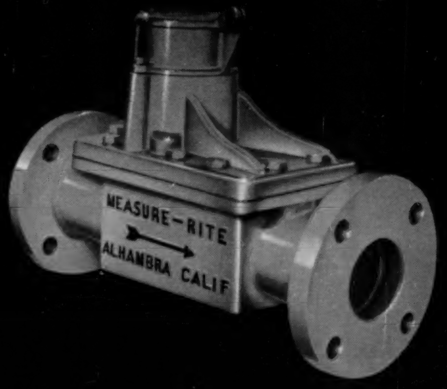
MEASURE-RITE
ALHAMBRA, CALIF

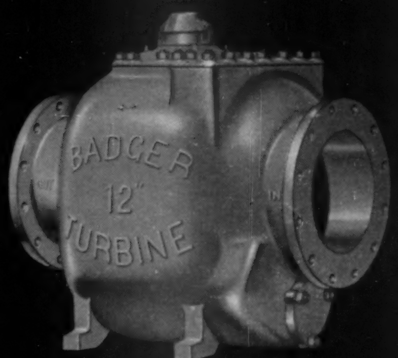
Badger

Read-o-Matic*

the only self-powered meter-register you can read outdoors

All Badger models can be equipped with the Read-o-Matic, for economical meter reading at conveniently located stations.





From Badger's "meter-ology" specialists...

a complete line of disc, turbine, compound and propeller meters for any high-accuracy job

For over 55 years, Badger has concentrated its research, design, development and production on meters. This "meter-ology" specialization has brought about many of the most important advances in the field.

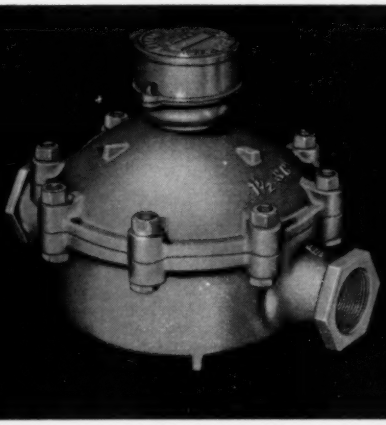
Badger disc meters, for example, feature the exclusive dovetail thrust roller insert as standard equipment. This insert cuts wear and noise at the water level, and guarantees more accurate registration.

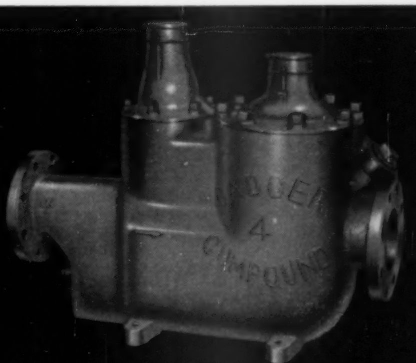
Our propeller meters, too, offer a major design advantage: they can be mounted even in an inclined position without affecting meter accuracy.

Still big news is the revolutionary Read-o-Matic outdoor meter-register — a completely new product that further proves Badger's "meter-ology" leadership.

Your Badger representative — a "meter-ology" specialist himself — will give you complete details on our whole line of meters, including the popular models shown here. Ask him to call on you soon.

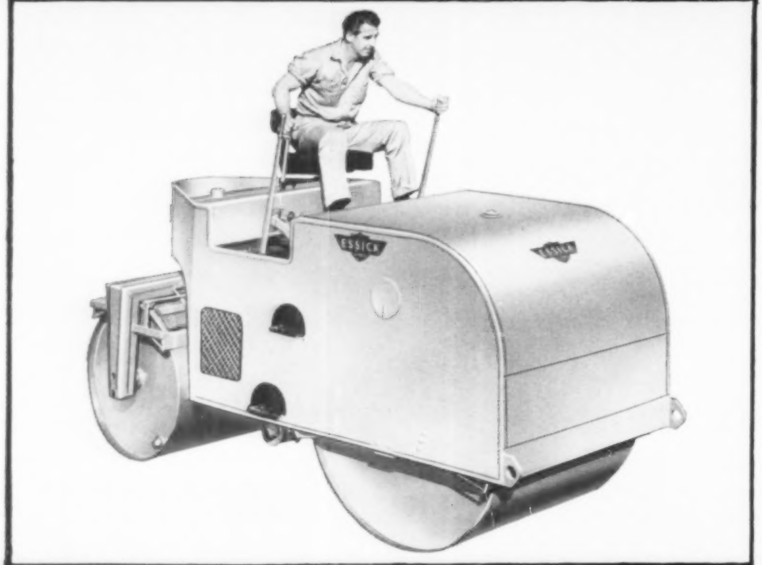
Badger Meter Mfg. Company
MEASURE-RITE, INCORPORATED, SUBSIDIARY
4545 West Brown Deer Road, Milwaukee 23, Wisconsin





*Pat. applied for in U.S.A. and foreign countries

ESSICK
TANDEM ROLLERS



Model 560 -3 1/2 to 5 1/2 Ton Roller

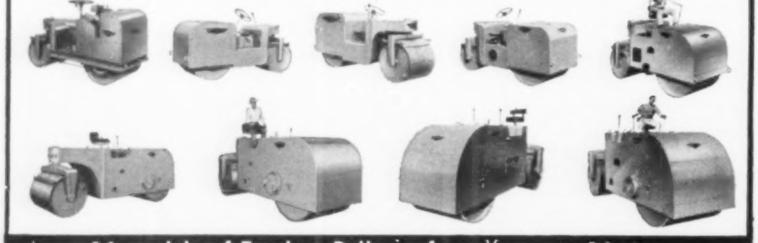
There's a

BIG DIFFERENCE

over a million miles of proof!

Essick Rollers, engineered and designed to offer a completely integrated line of 14 models, from 1/2 ton to 14 tons, are saving contractors thousands of dollars by providing more compaction at less cost—for any size job.

Contractors that use them.... recommend them!
See for yourself—ask for a demonstration



14 models of Tandem Rollers—from ½ ton to 14 tons

ESSICK MANUFACTURING COMPANY

1950 Santa Fe Avenue
Los Angeles 21, California

850 Woodruff Lane
Elizabeth, New Jersey

Affiliated with THE T. L. SMITH CO., Milwaukee, Wisconsin

FREE catalogs

Write to address given or circle corresponding number on free post card on page 55.

Free Film Promotes Better Water Supplies

360 A new 16mm sound and color film, produced and available from CHICAGO BRIDGE & IRON CO., PUBLIC RELATIONS DEPT., 332 S. MICHIGAN AVE., CHICAGO 4, ILL., shows how a growing midwestern city solved its pressing problem of an inadequate water reserve.

Flasher Light for Traffic Cones

361 Traffic cones become more effective night-time traffic aids when assisted by transistorized warning flashers. Visi-Flash No. 630 is such a light. It produces a 6 candle power beam, has signal duration strength of 400 hours, and a flash that pulsates 65 times per minute. For full facts, write R. E. DIETZ CO., 225 WILKINSON ST., SYRACUSE 1, N. Y.

Police Vehicle

362 A 3-wheel vehicle that comes equipped with fiberglass cab and achieves speeds up to 45 mph is proving well suited to traffic and general police work. It's called "Traffic-Master." For details, write INGERSOLL-KALAMAZOO DIVISION OF BORG-WARNER CORP., 1810 N. PITCHER ST., KALAMAZOO, MICH.

New Chlorine Manual

363 This 3rd edition of the *Chlorine Manual* reflects recent experience involving safety aspects of shipment and handling and use of chlorine. It is broader in scope than the 2nd edition, is well illustrated, and includes a valuable bibliography. Single copies are available from THE CHLORINE INSTITUTE, 342 MADISON AVE., NEW YORK 17, N. Y. *Price per copy is 50c.*

Facilitates On-Street Parking

364 A way to give motorists 50% more space in which to maneuver when approaching and leaving parking space, and at the same time lower parking meter installation costs 50%, is discussed in current literature available from DUAL PARKING METER CO., SUBSIDIARY OF ROCKWELL MFG. CO., PITTSBURGH 8, PA.

Detects Vehicles On the Move

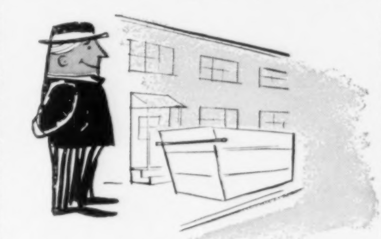
365 CHECKAR uses inaudible sound waves to sense the presence of motor vehicles. It can be used for signal actuation, traffic counting, parking gate control. And since it mounts overhead, it's free from hazards. For details, write ELECTRONIC CONTROL DIV., GENERAL RAILWAY SIGNAL CO., ROCHESTER 2, N. Y.

Street Lighting Equipment

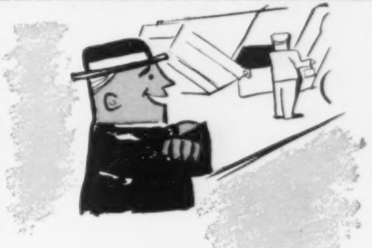
366 *Bulletin* GEA-6943 will bring you up to date on GE's new mercury luminaires, designed for every street and highway lighting application and ranging from 175 watts to 1000 watts. *Bulletin* GEA-6987 discusses a new photoelectric street light control. For both catalogs, write SECTION D 450-6, GENERAL ELECTRIC CO., SCHENECTADY 5, N. Y.

The Tale of the Commissioner's Crew...

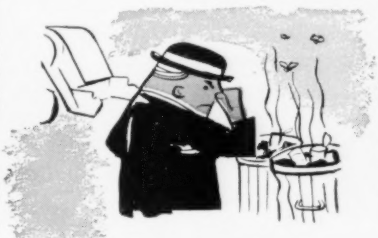
In common with many sanitation commissioners, Commissioner Gregg was concerned over the problem of refuse collection, particularly the new city housing projects. He looked into containerization.



One of his first steps was to arrange for a Roto Pac demonstration. He was impressed. Roto Pac containerization is ideal for housing developments, institutions and commercial areas.

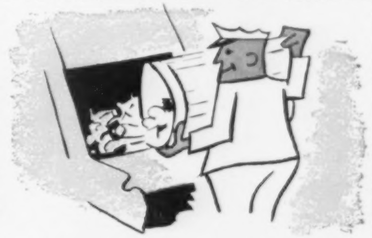


The reports from his crews were excellent: "Very simple to operate," "much less tiring for the operators," "fastest, easiest unit we've ever seen."



He could see for himself how much neater the Roto Pac containers were than the old accumulations of trash cans...rodent-proof, fire-proof and so much easier to keep neat too.

He found the Roto Pac to be the most efficient unit he'd ever seen. Because of its automatic continuous compaction, his crews lost no time waiting for batches to be compacted.

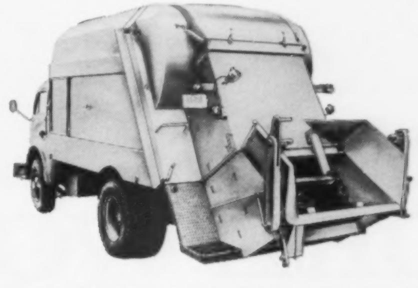


Of course, as Commissioner Gregg also learned, Roto Pac is the only collection truck on the market that can pick up manually dumped refuse on the same route as containers—all size containers—even the big 6 yard job.

More and More Cities find the ROTO PAC Container System means Lower Refuse Collection Costs

CITY TANK CORPORATION
ROTO-CAN

THE ROTO PAC CONTAINER Sturdy, neat, sanitary, and with the Roto Pac on-the-job disinfecting method, it stays that way. With six sizes to choose from, you can meet the requirements for any route. 1 to 6 yards.



THE ROTO PAC COLLECTION UNIT...the only unit on the market that provides *automatic continuous compaction.* The time it saves at each stop adds up to one extra full load per truck per day. That's efficiency! New or old Roto Pac units can be adapted at very modest cost for containerization.

For complete information on how the Roto Pac containerization system can cut your refuse collection costs, mail this coupon today.

Roto Pac Containerization
City Tank Corp.
Corona 68, N. Y.

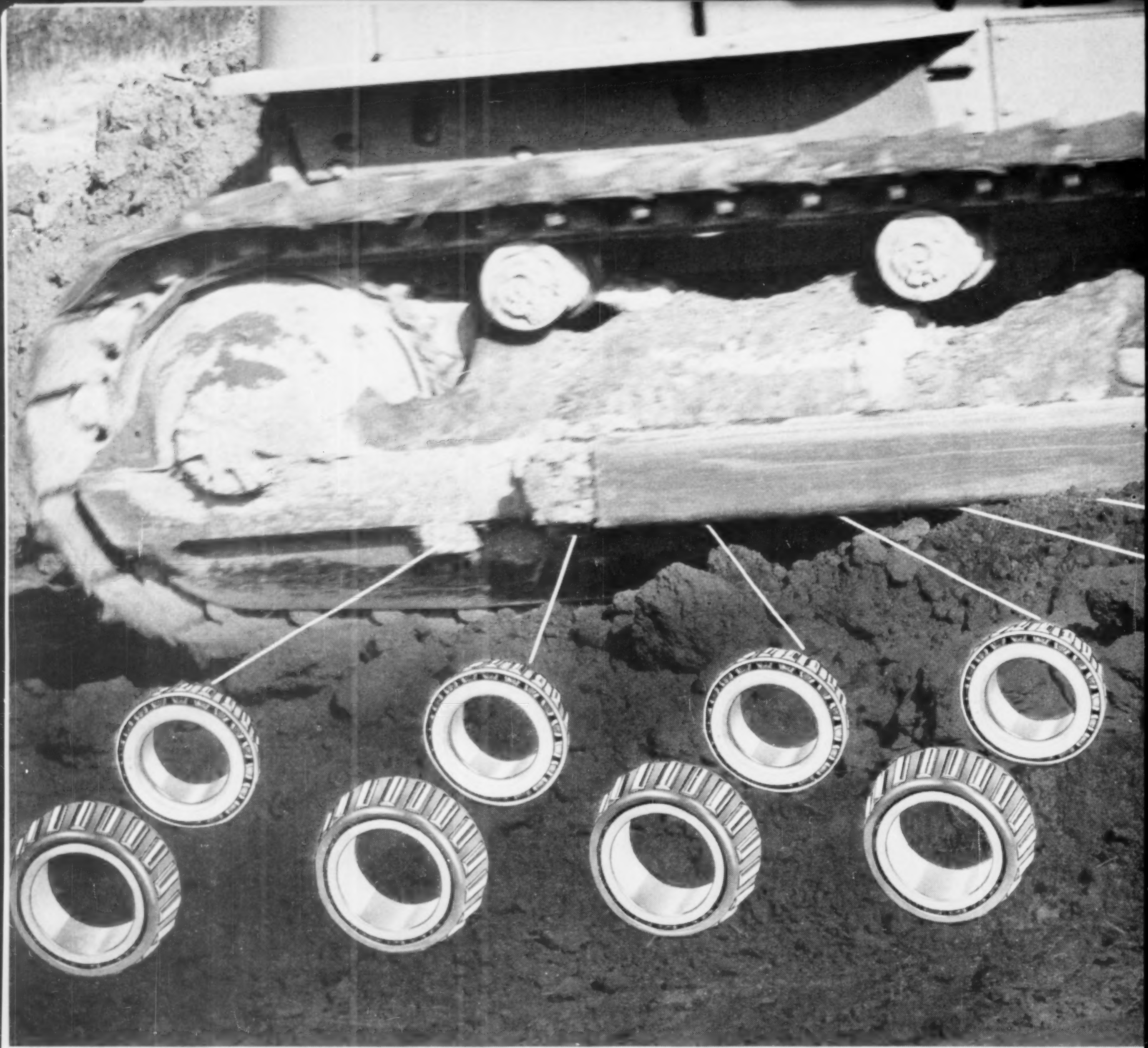
Please send literature on Roto Pac container system and have your representative contact us for a demonstration.

NAME ....

TITLE ....

ADDRESS ....

CITY .... ZONE .... STATE ....



MORE WORK POWER

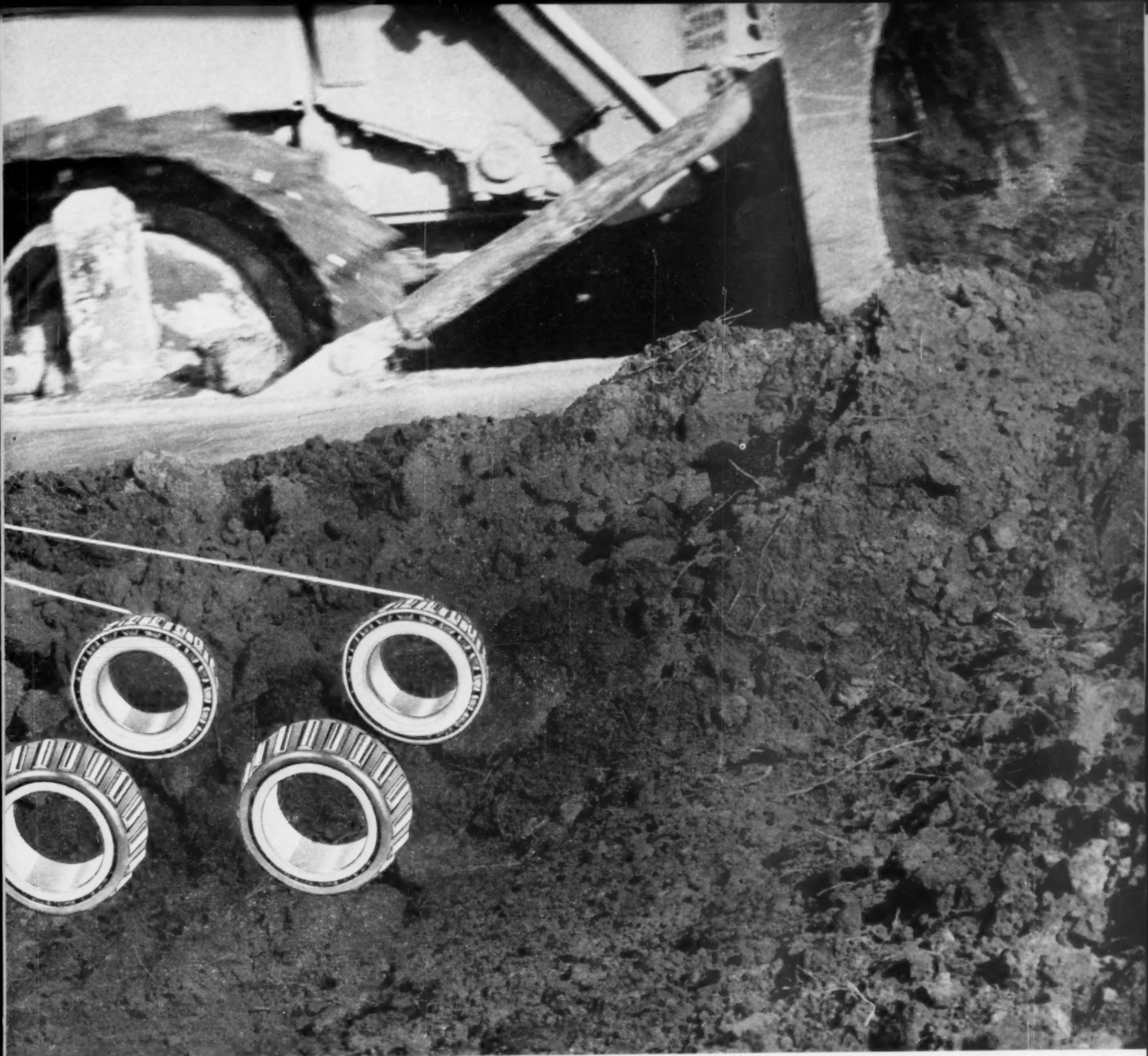
Reduced friction through use of tapered roller bearings in all Allis-Chalmers crawler tractors makes the difference in work power for you!

All Allis-Chalmers crawler tractors roll on tapered roller bearing truck wheels. Most others still use bushings.

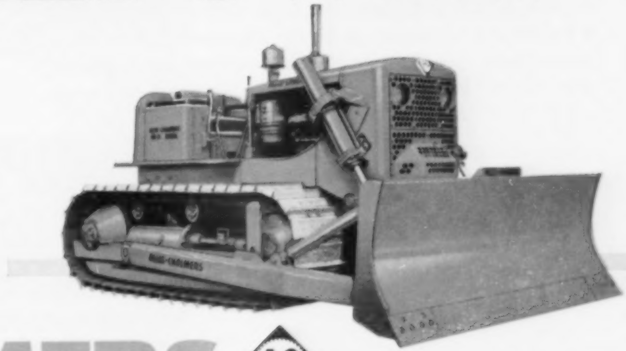
Anyone who remembers his roller skating days knows the performance advantages of bearings over bushings. The difference between first and also-ran was in the wheel bearing. This friction-reducing advantage is the reason railroads all over the country have turned to *roller* freight.

The same principle applies to tractors except much more power is being wasted by friction-type plain bushings. It's one of the reasons the 99-hp HD-11, on tapered roller bearings, produces right alongside larger crawler tractors. Can you continue

move ahead with



PER HORSEPOWER



to pay for power that *never* produces—that gets "lost" in old-fashioned bushings?

Your Allis-Chalmers dealer will be glad to discuss this and the many other advantages that keep the HD-11 on the go shift after shift with a minimum of maintenance. Ask about the *toughest track ever built* . . . the *industry's healthiest engine* and *certified permanent lubrication*. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

ALLIS-CHALMERS

power for a growing world

NO OBSOLESCENCE WITH TRIDENT METERS

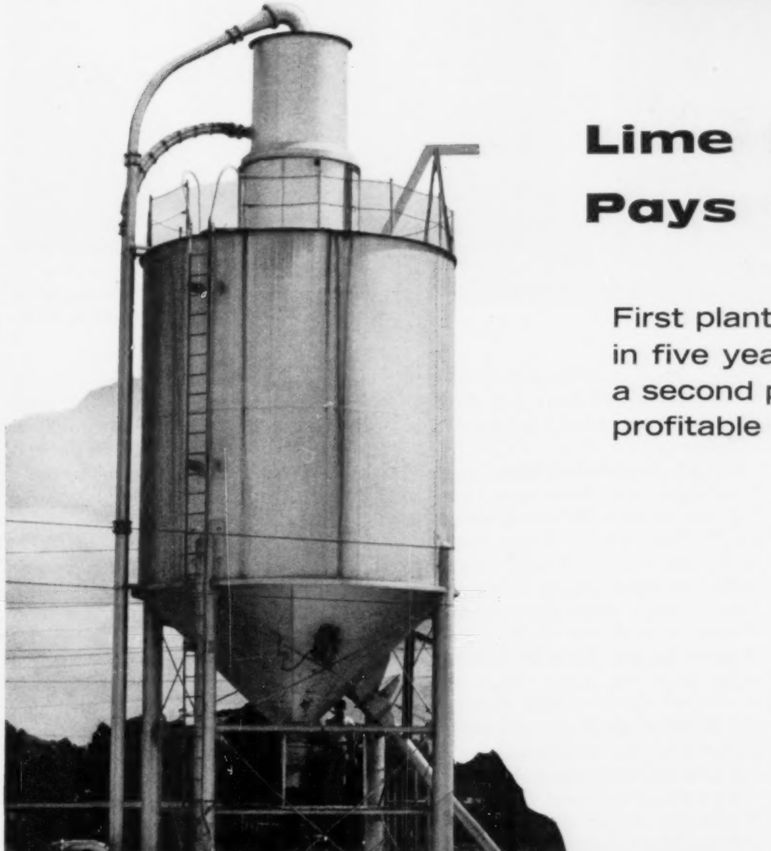
Being modern today is the continuous process of going out-of-date tomorrow. Look at the record of Trident design improvements and you'll find this statement is just as true of water meters as it is of automobiles . . . *with one exception.* ■ With Trident meters, your department is probably the only service in your community equipped with *built-in modernization* . . . a process which eliminates the high cost of obsolescence. ■ Here's how it works. ■ Every time you replace work-worn parts in a Trident disc meter, you automatically use *modern* parts identical to those in the *latest* model . . . parts embodying every thoroughly tested advancement known to the science of metering. Not only is repairing easy and economical, but also you actually *modernize* your Tridents as you go. ■ Take a look at the past 30 years. Think how much you're saving *this* year on Tridents installed back in 1930 . . . or even 30 years before that. ■ *All of the many design improvements now on our drawing boards continue this long standing Neptune policy*. It's your assurance that the Tridents you buy today will not be obsolete tomorrow. For personal proof, check your own records.

neptune
TRIDENT WATER METERS

NEPTUNE METER COMPANY
LIQUID METER DIVISION

19 W. 50th Street, New York 20 / Neptune Meters, Ltd., 1430 Lakeshore Rd., Toronto 14, Ont. / Offices in Principal Cities

MAY 1960 The American City



This specially built 16-to-18-ton-capacity trailer truck transports lime to the Alexander Orr, Jr., treatment plant 13 miles away.

Lime Recovery Pays In Miami

First plant pays for itself in five years—studies indicate a second plant will be profitable by 1963

By **C. F. WERTZ***
Director

"This One's Saving You Money." On January 2, 1959 the *Miami Herald* used this headline to call attention to our lime-recovery plant. The article went on to say: "If you live in one of the 13 cities and towns here or in that part of the unincorporated area which gets water from the central system, you can look admiringly at that 230-foot kiln whenever you pass by. It's saving you and other water consumers $200,000 a year."

When the plant was built in 1948, it was a world's "first." Never before had a city water works utilized a recalcination plant to convert calcium carbonate sludge into lime for re-use in the softening process.

The plant resulted from years of study on the part of the Water and Sewer Board, consulting engineers and others. There were legal questions to settle; a private firm's opposition to iron out; months of sweating over experts' reports and opinions; analysis of the waste sludge that was to be raw material; lime-kiln studies; construction estimates and revised studies.

All this effort was not in vain as

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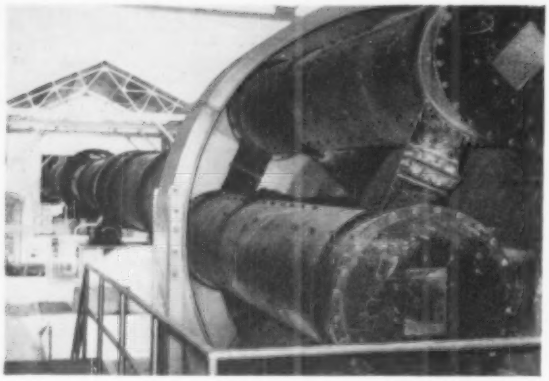
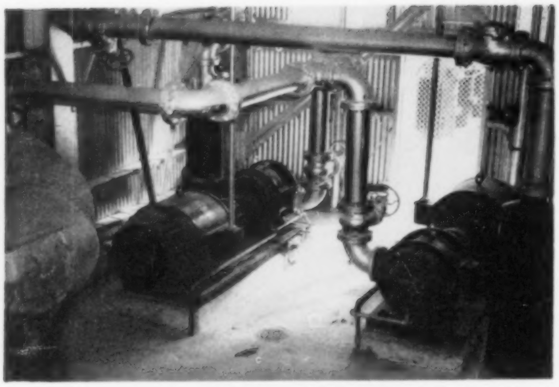
* Mr. Wertz, Director of the Department of Water and Sewers, Miami, Fla., is Vice-President and President-elect of the American Water Works Association.



These coolers, located at the discharge end of the kiln, reduce the lime temperature from 2100°F to about 600°F.



A part of the stack gases is compressed by these units and used for recarbonation at the Hialeah softening plant.

is shown by operating figures from 1951 through 1958. The plant was completed in December 1948 at a total cost of $792,521. Investment in the plant, including the purchase and installation of a second centrifuge, an increase in the height of the storage silo and bucket elevator to provide greater storage capacity, and the provision of a vibrating root separator at the wash mill, brought the total capital investment figure to $856,497 by June 30, 1958.

On the other side of the ledger, we saved $1,795,703 from 1951-1958 by producing our own lime rather than purchasing it from an outside source. Table I shows these costs on a yearly basis while Table II shows the cost of lime produced at the recovery plant on a cost-per-ton basis.

The estimated interest and depreciation shown is admittedly light, representing an average interest rate of 2.80% on all outstanding bonds as of June 1958 and 1.5% for depreciation, a percentage set aside in a depreciation reserve fund of the entire water utility plant. The figures also include income from the sale of excess lime to Fort Lauderdale for the first seven years at $10.50 per ton. However, the application of more realistic interest and depreciation figures would still leave us with a substantial savings.

Sludge Thickened and Dehydrated

The recalcining plant, located adjacent to the Hialeah Softening and Treatment plant, has a design capacity of 80 tons of quicklime per day. With an average lime dosage for both the Hialeah and the Alexander Orr, Jr., plants of 1,400 pounds per million gallons, we can produce sufficient tonnage to treat an average of 97 mgd. (Based on a safe production of 75 tons per day for 330 days for a yearly production of 24,750 tons.)

Thickening of the sludge pumped from three clarifiers takes place in two tanks, each 32 feet in diameter by 15 feet deep. These concrete tanks are equipped with Hardinge thickener mechanisms having variable speed control. Additional sludge is available from a 20-acre sludge lagoon located about 1¼ miles from the plant. This sludge is trucked to the plant, reduced to the liquid state in a wash mill, and pumped to the thickeners for mixing with the new plant sludge.

Two sand pumps transfer the thickened slurry, containing 20%-30% solids, to an adjustable spiral-scoop slurry feeder located on the top floor of the feed building. From here it flows by gravity to two 40x60-inch Bird dehydrating centrifuges that produce a cake containing 66.8% solids. A ribbon screw conveyor transports the cake from the centrifuges through a plenum box into the feed end of the kiln. Waste water flows by gravity to the sludge lagoon.

Efficient Operation

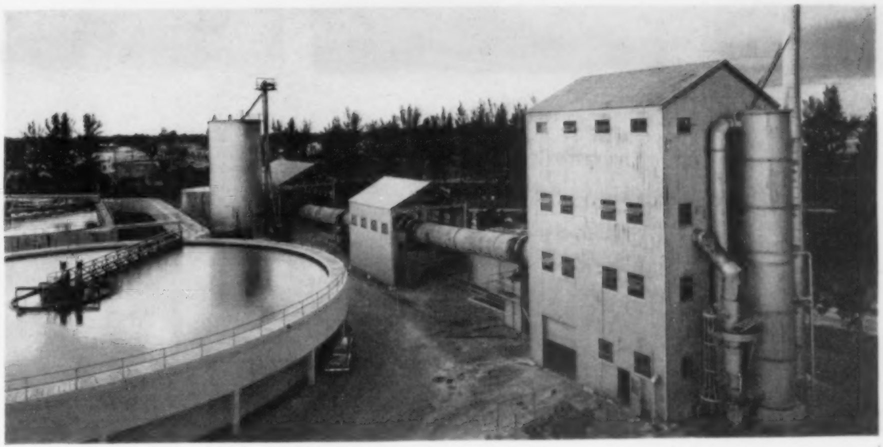
The four-support Unax rotary kiln, manufactured by F. L. Smidth & Co. of New York, is of all-welded design, 7½ feet inside diameter by 230 feet long, with an integral multi-cylinder cooler. A four-speed motor with reducing-gear arrangement drives the kiln at speeds of 1.09, 0.85, 0.57 and 0.43 rpm, with the fastest speed used under normal operation. The kiln motor and four-speed slurry feed motor are synchronized and are remotely controlled by push buttons at the control panel in the discharge building. A screw conveyor and bucket elevator delivers the finished product to the 460-ton steel storage silo

Table I

COMPARISON OF LIME PURCHASING COSTS WITH LIME RECOVERY COSTS, 1951-1958*

		Lime Recovery		
Year	*Market Value of Lime Recovered*	*Expenses Operating*	*Interest and Depreciation*	*Savings*
1951	$ 299,060	$ 97,055	$ 28,900	$ 173,105
1952	326,100	112,182	30,254	183,664
1953	343,140	107,051	30,950	205,139
1954	340,740	120,897	32,750	187,093
1955	395,136	117,405	34,150	243,581
1956	453,244	146,981	34,000	272,263
1957	485,870	187,540	35,800	262,530
1958	487,598	182,470	36,800	268,328
Totals	$3,130,888	$1,071,581	$263,604	$1,795,703

* Fiscal years ending June 30.



For the past nine years this rotary-kiln lime recovery plant has been saving money for the Miami Water Department, savings that average $200,000 a year.

which is 46 feet high and 25 feet in diameter.

A mechanical, high-pressure, oil-atomizing system using Bunker C oil fires the kiln to a temperature of 2100°-2200°F in the firing zone. A 15-hp steam boiler using three gallons of fuel oil per ton of lime produced preheats the Bunker C oil to 200°F, but an electric heater is also provided for standby.

A heat-recuperating chain assembly weighing about 11,000 pounds and located in a 37-foot-long section at the feed end of the kiln effectively exchanges heat between the hot exhaust gases and the incoming sludge. This is reflected in the low fuel consumption of about 55 gallons of fuel oil per ton of lime produced.

Eight cylinders equally spaced around the kiln outlet make up the cooler. Each contains spiral conveying flights of heat-resistant cast-iron. Secondary combustion air passing through the coolers reduces the temperature of the burned lime from 2,100°F to approximately 600°F. This serves as another heat exchange resulting in better overall efficiency.

Close draft control adds to the plant efficiency, and we have found that a residual of 2% oxygen in the exhaust gases results from maximum oil efficiency without production of noxious stack fumes.

Air Pollution Control

Close proximity of the plant to the Hialeah business and residential areas makes it necessary to control dust. A water-scrubbing tower with humidifier, installed between the kiln and the induced-draft fan, effectively removes dust from the exhaust gases and reduces gas temperatures from 400° to about 100°F.

For further economy we use a portion of the stack gases, which contain about 25% carbon dioxide, in the softening plant recarbonation basin. Two Nash compressors of 570 cfm of free gas at 100°F against 8-psi gauge are used for this purpose.

Scrubber waste water, spillage from the sludge thickeners, and other waste water flows to a sump for repumping to the inlet end of the mixing basins of the softening plant.

Instruments and controls, located in the discharge building, include a recording pyrometer, percentage carbon dioxide and oxygen recorders, an oil-pressure recorder, a flow-and-temperature meter, an air-operated combustion-control unit, a draft gauge and various alarms. Personnel in the discharge building, feed building and the chief operator's room at the treatment plant can communicate by means of an inter-com system.

The Alexander Orr, Jr., water treatment plant, located some 13 miles from the Hialeah plant, includes in its chemical building three lime-storage bins, each of 250 tons capacity. A trailer-truck with a specially designed hopper bottom transports lime between the two plants. The truck has a capacity of 18 tons. It is loaded from an 80-ton auxiliary silo at the recalcining plant and unloaded pneumatically directly into the bin at the Alexander Orr, Jr., plant.

At Hialeah an air blower conveyor of 10-ton-per-hour capacity moves lime from the storage silo to the 100-ton bins in the chemical house, 600 feet away, and to the auxiliary silo.

Average daily water use is rapidly approaching the point where our lime plant will no longer be adequate to supply the need.

According to present estimates we will be able to operate a second recalcination plant by 1963. This plant will be located at the Alexander Orr, Jr., water-treatment-plant site.

Maintenance

Another step toward maximum efficiency is accomplished through an excellent program of preventive maintenance. Our operating force handles all phases of the work, including relining of the kiln.

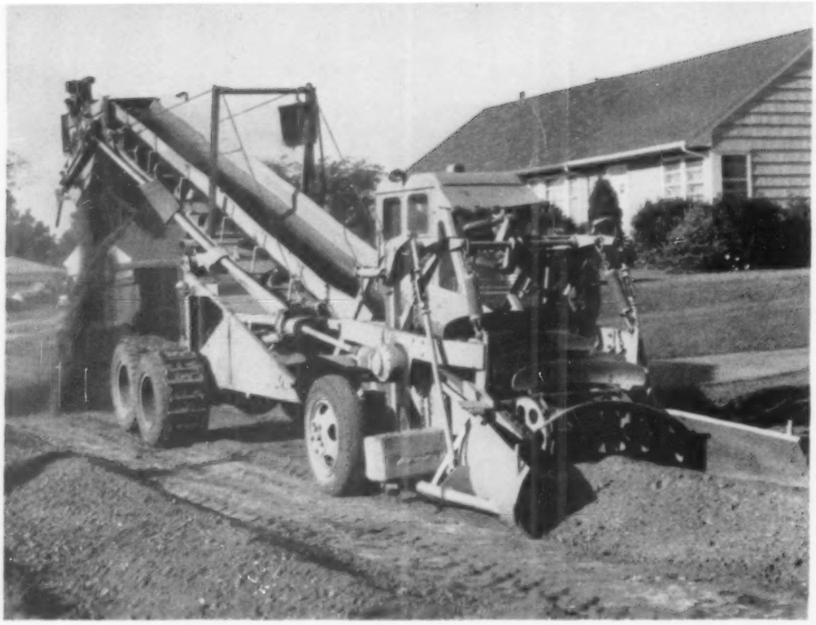
We shut down for a period of seven to ten days twice a year to inspect and repair all machinery and the kiln lining thoroughly. Chrome ore is used to caulk all loose bricks. The largest section ever relined at one time was a 32-foot section at the firing end. As a result of this program the maintenance costs remain fairly constant from year to year, averaging approximately $16,500 for the last seven years.

Major items of maintenance in the past included the relining of the 32-foot section, resurfacing of two of the large roller supports and painting of the structures. ◄◄

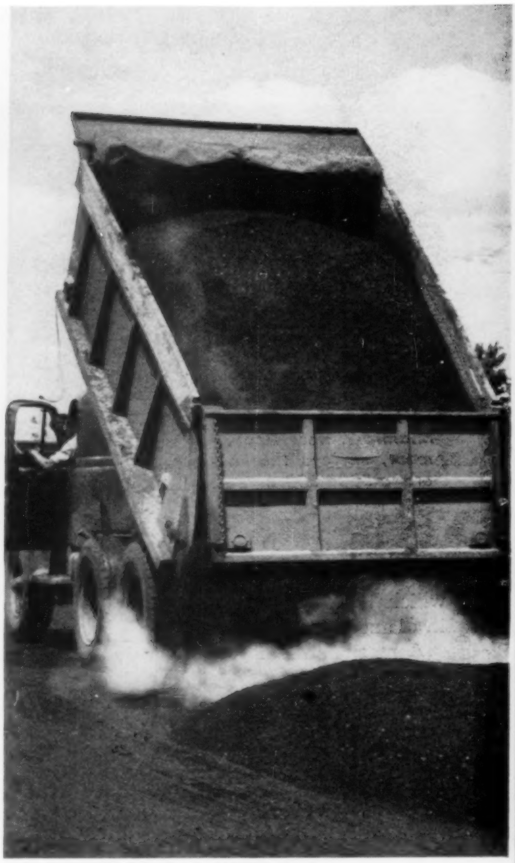
Table II

LIME COST AT RECOVERY PLANT

Year	Dollars/Ton
1951	$6.49
1952	6.88
1953	6.24
1954	7.10
1955	6.24
1956	7.13
1957	8.49
1958	8.08



This Athey loader with an attached vibrating screen picked up the windrowed base material, dumped the oversized rock into a truck and returned the screened material to the street where it was spread to proper grade and crown, compacted . . .



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. . . and covered with asphalt surfacing material hauled in from a central plant . . .

Water, Sewer Mains Influence Street

By **R. O. FOLLAND***
Director of Public Works

Nobody likes to see a municipality's streets repeatedly torn up and repaved for water, sewer and other utility construction. The public gets understandably annoyed and the city officials get discouraged. We are trying to minimize this problem in St. Louis Park, Minn., by careful planning and design.

In less than 20 years, St. Louis Park, a suburb of Minneapolis, has grown from a population of 7,700 to approximately 42,000. This created many problems in urban development; included among them was the need for water mains, sanitary and storm sewers, and street paving. From 1956 through 1958 the city virtually completed the sanitary-sewer system by installing 31 miles of sewers.

From the outset, we considered the problem of resurfacing the streets in which the sewers were laid as part of the sewer program. The proceedings initiating sewer construction included provisions for the resurfacing of all streets paved by road-mixed bituminous surfacing.

Most of the 31 miles of streets that we were providing with sanitary sewers would have to be torn up again for installation of storm sewers. In order to avoid excessive costs for this latter operation we had to do some careful planning. The cost of resurfacing with temporary paving is high and we felt that it could be saved.

We already had designated proposed locations of the storm-sewer lines. We then made studies to determine which of the 31 miles of streets could be surfaced with permanent paving. These studies showed that approximately six miles could be so surfaced, and that 25 miles would require additional underground utility installations in the future.

To provide the six miles of permanent paving required that new hearings be held to present the proposed change to the affected property owners. We did this in the spring of 1959, receiving almost total acceptance of permanent paving at those locations where it was feasible to construct it.

The "permanent" paving adopted consisted of portland-cement concrete curb and gutter with the pavement structure between gutters consisting of six inches of gravel base compacted by the Specified Density Method and surfaced with two inches of hot-mix asphalt wearing course.

For the "temporary" paving, the construction procedure and design involved consideration of a number of factors. Our basic objective was to provide a low-cost surface that

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* Mr. Folland accepted the position of Director of Public Works for St. Louis Park in July 1958. Prior to that he served for two years with the Minnesota Department of Highways as field engineer, and four years each with the City of Moorhead, Minn., as Assistant City Engineer, and Albert Lea, Minn., as Director of Public Works.

. . . to be spread and compacted. Note the bituminous lip curb being formed to minimize the erosion of lawns.

On the permanent pavement the gravel base was spread and compacted after the completion of the concrete curb and gutter.

Paving Design and Programming

would stand relatively heavy traffic with a minimum of maintenance. Subgrade materials were excellent. The existing street surfaces after sewer construction consisted of clean glacial pit-run gravel with a surplus of large igneous rock mixed with some medium-curing asphalt materials. Following sanitary-sewer construction, we applied approximately 260,000 gallons of MC bituminous material to the streets as a penetration treatment to control dust and partially stabilize the loose gravel. The oil had penetrated the loose material to a considerable depth. Existing conditions indicated that best results for the least cost would be obtained by constructing a base course with existing materials and surfacing the prepared base with a road-mixed bituminous surface.

Specifications adopted for the base provided that the existing surface material was to be windrowed, pulverized, and screened so that all of the material incorporated into the upper four inches of the compacted base would pass a two-inch standard sieve. This required the elimination of all large rock from the existing material in order to shape and compact the base and to prevent movement of smooth boulders under the mat. We anticipated that the

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Author Folland, at left, points out features of the permanent paving to City Manager Tom Chenoweth (center) and Mayor Kenneth Wolfe.

contractors would use their usual ingenuity in adapting machinery to solve the screening problem, and this proved to be the case. Payment for the base construction was made under two items in the contract. "Excavation" on a cubic-yard vehicular-measure basis provided for disposal of all oversized screen material within a radius of two miles from the point of excavation. The four-inch-thick base screening and compaction was paid for on a square-yard basis completed in place. The surfacing requirement specified a road-mixed bituminous surface of two- or three-inch thickness using cut-back asphalt (MC-3), paid for on the basis of tons of aggregate and gallons of bituminous material used.

Known Requirements

With the exception of the base construction for the road-mixed bituminous surface, we built the specifications around the requirements of the Minnesota Department of Highways specifications for highway construction to insure familiarity with the work by the large contracting firms who were expected to bid. Dividing the proposal into three parts allowed us to take advantage of the benefits of a large construction project. Section "A" included all the road-mix bituminous paving. Section "B" included the curb and gutter and permanent paving, and a combination of Section A and B bid as a unit was allowed as an alternate bid. As a result, one contractor was awarded the permanent paving and curb and gutter and another contractor was awarded the road-mixed surfacing. The road-mixed-paving contractor elected to set up a crushing plant and mixing plant within the city limits, producing the mixture in a central plant and hauling it to the streets to be laid with motor patrols. This procedure yielded a uniform production of bituminous mix without having to contend with drying operations on the street. The hot-mix asphalt mixture was also produced at a local plant which was located within the city limits.

To separate the large stones from the base for the temporary paving, the contractor installed a vibrating screen on an Athey loader which worked out very well. With this attachment the oversized material was directed off the screen into the trucks while the screened material was laid back in windrows on the street. Three passes of the screening equipment usually completed this operation for a 30-foot street. The base compaction followed the screening procedure as closely as possible after which the base was primed and the road-mixed bituminous material laid. The screened material with the existing oil compacted well and was not difficult to shape.

This year we plan to seal coat as many miles as possible of the road-mixed surfacing, using city forces. The permanent hot-mix asphalt paving will be seal coated by city forces in the future when it is required.

We feel that this work has been successful and is a result of far-sighted thinking on the part of the mayor, city council, and the administrative staff under City Manager Tom Chenoweth. The engineering department of the Division of Public Works handled all design and overall inspection of the projects, and the Twin City Testing and Engineering Laboratory of St. Paul, Minn., provided the materials inspection and field-control inspection services. The Barton Contracting Company of Osseo, Minn., held the contract for the road-mixed bituminous surface in a total amount of $324,000, and the Black Top Service Company of St. Louis Park held the hot-mix asphalt paving and curb and gutter contract in a total amount of $294,000. Victor Carlson and Sons, Inc., of St. Louis Park were subcontractors on the 43,000 feet of curb and gutter. ◄◄

Parapets Are "Bombs", Says Los Angeles

Unreinforced masonry parapets, stone cornices and ornamentation are dangerous and no one knows it better than Los Angeles, Calif.

The Long Beach earthquake of 1933 pointed to the dangers but they were obscured by widespread collapse of entire buildings. Subsequent earthquakes, however, have provided further evidence.

Los Angeles was the first city in the nation to recognize this danger and to take effective action to remove it. In 1949 the Parapet Correction Ordinance was enacted. This ordinance was specifically aimed at those building parts which are the most hazardous. It makes it mandatory that they be corrected.

To discover the hazards, a modest force of engineers and inspectors was assigned the job. Since 1949, over 100,000 tons of potential masonry "bombs" have been removed from over Los Angeles' streets and sidewalks.

The cost has been low: expenses to the taxpayer are less than three cents a year. Expenses to individual building owners for correction are likewise modest, averaging less than $1,000 each.

In 1949, 30,000 masonry and concrete buildings of old-type construction needed inspection and evaluation of the structural condition of parapets and appendages. Over 10,000 buildings have already been inspected.

Over 75% of all inspected buildings have either been made safe or given a clean bill of health. ◄◄

The masonry was dangerous . . .

. . . but today is safe.

Wet Oxidation—A Fresh Idea In Sewage Sludge Disposal

This new method, also known as the Zimmermann process, will be used by the Chicago Sanitary District and Wheeling, W. Va.

Wet oxidation, the Zimmermann* process of sewage sludge destruction, offers the nation's cities the possibility of a challenging new way to dispose of sewage sludge. In this process, a plant can "incinerate" its sludge while it is in liquid form, freshly collected from the settling tanks. It offers the possibility of eliminating digesters, drying beds, vacuum filters, and sludge incinerators.

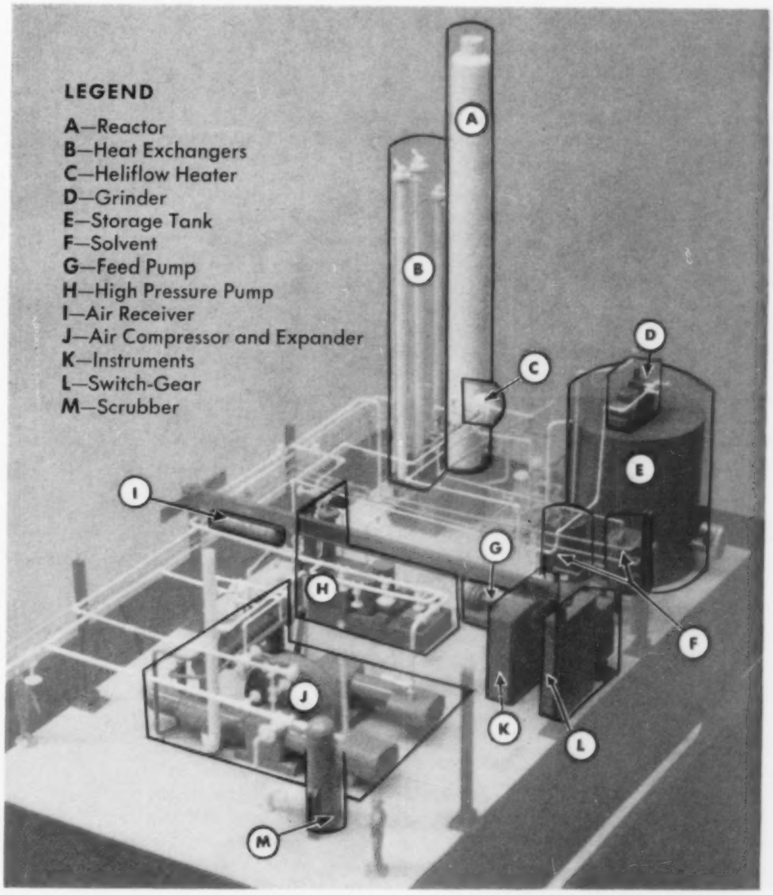
Signed construction contracts, soon will place permanent Zimmermann equipment in at least two cities, Chicago and Wheeling, W. Va.; an experimental model is being built in Wausau, Wis. The process is a development of Sterling Drug, Inc., New York, N. Y.

Chicago's Plant

The first, an $11,870,000 contract for construction of a 200-ton-a-day (dry basis) wet-oxidation plant for the Metropolitan Sanitary District of Greater Chicago, came as the result of a year-long study of a two-ton-per-day (dry basis) pilot plant installed at the District's West-Southwest Sewage Treatment Plant. The study, under supervision of William A. Dundas, General Superintendent of the District, and Dr. E. Hurwitz, Director of Laboratories, demonstrated the effectiveness of oxidizing sludges with volatile solids ranging from 2.9% to 4.57%. Within the range of these concentrations, the oxidation method reduced volatile solids in the liquid sludge by 90% and total solids by 67.3%.

The new Chicago plant, to be constructed at the West-Southwest Works of the District, will contain four oxidation units, able to receive raw sludge with 3% total solids concentration. Each will be able to oxidize 50 dry tons of solids a day. In addition, the plant will contain one turbo-generator, installed to generate electrical power from gases emanating from the process. The installation should be complete and ready for operation by 1961.

On the heels of the Chicago contract, Wheeling, W. Va., became the second municipality to adopt the method for sewage-sludge disposal. The Wheeling Sanitary Board's decision to use the process will involve a plant with a capacity of only 5.6 (dry) tons of sludge per day. This capacity would serve cities of



The scale model of a 5.6-dry-ton plant demonstrates the characteristics of low area requirements (compared with anaerobic sludge reduction) and a comparatively uncluttered design that is possible with Zimmermann units.

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* Frederick J. Zimmermann, inventor of the process, is President of the Salvo Chemical Corporation, a wholly owned subsidiary of Sterling Drugs Inc. He is also Chairman of the Production Committee of the parent company.

approximately 110,000 population equivalent.

The Wheeling plant will use the fuel content of the sludge to produce heat and power required for operation of the process itself. The plant is scheduled to be completed and ready for testing by late fall.

What the Process Is

The Zimmermann process represents a departure from conventional anaerobic digestion of sewage sludge solids prior to disposal. It differs also from other methods, such as vacuum filtration of the undigested sludge followed by incineration. It operates on the principle that organic matter contained in liquid sewage sludge can be oxidized (burned) in combination with an optimum quantity of air-borne oxygen without first being dehydrated by vacuum filtration or evaporation.

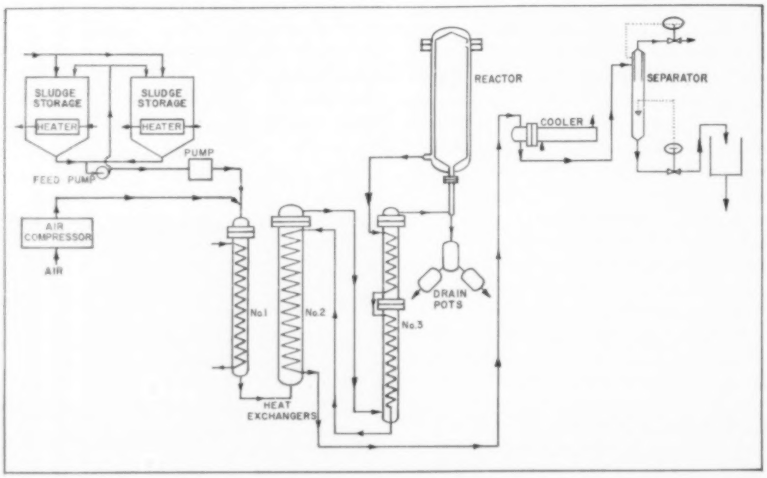
Wet combustion, under proper conditions of pressure and temperature, generates heat in about the same quantities developed when incinerating conventionally dehydrated sludge. Thus, a pound of primary sludge, which contains a potential heat yield of 7,820 BTU and which would require 1.334 pounds of oxygen (5.75 pounds of air) for complete combustion, would yield 1,365 BTU per pound of air supplied to the process. Likewise, a pound of activated sludge (6,540 BTU) requiring 1.191 pounds of oxygen provided by 5.14 pounds of air would yield 1,270 BTU per pound of air.

While temperatures within the process can be selected anywhere below 705°F (the critical temperature above which water can no longer exist in liquid form), the high level of efficiency is about 500°F. At this temperature, the process can remove 90% of solid organic matter. As temperature rises above 212°F, sufficient pressure must be added to the system to force condensation of the water and support oxidation. At 500°F, it was established that 1¼ pounds of steam per pound of dry air could be produced at a pressure of 1,200 psig.

A list of equipment for the pilot, two-ton-per-day Zimmermann oxidation plant used during the Chicago study includes:

1 air compressor—capacity 150 cfm, 1,200 psig
1 air receiver
1 high-pressure sludge pump
2 calibrated sewage - sludge storage tanks with agitators, 2,000 gallons each
3 stainless-steel heat exchangers
1 stainless-steel reactor
1 stainless-steel separator
1 stainless-steel cooler

The various types of sewage sludge oxidized by the pilot plant were thickened and ground prior to transfer to the two storage tanks. The amount of power generated, all other things being equal, depends on the concentration of volatile matter in the sludge. For example, the power required to oxidize 50 (dry) tons of solids per day delivered to the reactor as 2% sludge (± 70% volatile) is 2,016 hp. The mixed gas from the reactor will develop 1,320 hp, leaving 696 hp that would have to be supplied from an outside source. For 6% sludge, however, 1,710 hp would be required and the mixed gas would develop 1,890 hp, leaving an excess of power that may be used for other purposes. On the same basis, once started, the plant using 4.25% sludge would be completely self-sustaining.



A year-long study of a two-ton-per-day pilot plant in Chicago validated this flow diagram—and led to a contract for a 200-ton-per-day plant.

Grinding was desirable to reduce the sludge to particles less than one-quarter-inch in size to insure passage through pump clearances.

Using the sketch (above) of the two-ton pilot plant erected at Chicago as a reference, the flow of sludge from the storage tanks is as follows:

Sludge flows at the rate of approximately 200-240 gallons an hour from the heated storage tanks at 180°F through a rotary feed pump into a high-pressure pump that forces the sludge up to the required pressure.

Immediately after passing through the high-pressure pump, the sludge is joined by air from the air compressor, which has a capacity of 150 cubic feet per minute at 1,200 psig. The sludge and the air pass through heat exchanger #1, to which steam is applied only during the start-up period, then through heat exchanger #2 where the temperature is raised to 380°F, and finally to heat exchanger #3, where it is raised still further to 460°F. The heat exchangers are designed to heat four gallons a minute of the sludge-air mixture.

The mixture, at 460°F, is introduced at the bottom of the reactor and is oxidized as it passes upward through a coarsely baffled path in the central body of the unit. Resultant gases (nitrogen, carbon dioxide and residual oxygen), steam, water and ash spill over the top of the inner shell and into the space between the shell and the outside walls of the reactor. The oxidation of sludge is now completed and the mixed by-products pass throughout the bottom of the reactor at 515°F and into heat exchangers #2 and #3, where the heat is used to preheat incoming sludge and air.

In heat exchanger #3, the temperature of the oxidized material is reduced to about 500°F and in #2 to about 440°F. It is then passed through a cooler which further reduces the temperature to about 150°, at which it is passed into the separator. The gases vent to atmosphere and the effluent is withdrawn continuously from the separator. The ash, equal in weight to the residue from incineration of the same volume of solids, is contained in the effluent, which is pumped to a lagoon or fill.

Lagoon or fill disposal of the ash is practical because the ash, containing only about 10% organic matter, is extremely stable.

The cost of Zimmermann-process oxidation plants varies according to the operating conditions required and size of the required unit. However, for units of four or five (dry) tons per day of capacity and larger, the original equipment cost will be in the range of $30,000-$60,000 per ton of daily capacity. Sterling Drug Company is currently installing a model low-cost small unit, suitable for communities requiring one ton or less of daily capacity, at the sewage treatment plant in Wausau, Wis.

Sterling's engineers claim that the Zimmermann process will not only dispose of sewage sludge more economically than conventional methods but affords these additional advantages:

1. **Less land area is required**
2. **Less capital investment per ton of sludge**
3. **No odor or air pollution**
4. **Can be located close to the city it serves**
5. **Cost of disposal is less than that of conventional methods even where primary sludge only is handled, and considerably less where both activated and primary sludges are processed. In both cases, the savings become greater as the size of the unit increases.** ◄◄

Radio Paging at the Winter Olympics

Community-wide selective radio paging was a necessary part of the communications systems at the Winter Olympics in Squaw Valley.

Marion V. Long, Director of Communications for the Olympics, called for a feasibility study with Stromberg-Carlson Pagemaster equipment more than a year before the games actually took place. Long wanted the Pagemaster system integrated into the overall communication system for the Olympic Village—the equivalent of a town of 35,000—built from scratch especially for the games.

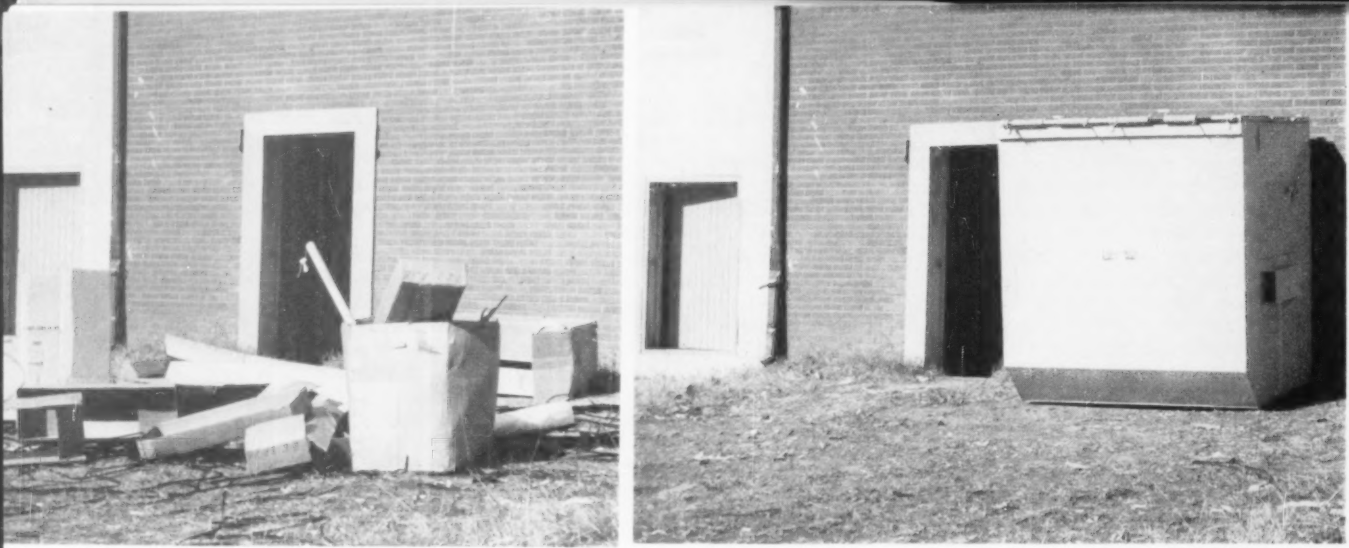
Telephone service was available conveniently everywhere in the Olympic areas. The one problem was how to locate instantly the man wanted.

After the workability of the equipment was established, the basic equipment, including the signal encoder, the transmitter and 40 receivers, was ordered. Telebeam Industries, Napa, Calif., designed the antenna which incorporates innovations applicable in future community-wide paging systems.

The system at Squaw Valley was specified for a radius of three-quarters of a mile from the transmitter. The signal in this case was generated by a standard Pagemaster 327B 5-watt transmitter. However, community paging jobs can cover areas up to 15 miles in radius by increasing the transmitter power. Elements are now available for providing community paging systems to accommodate up to 3,200 users. ◄

← *The operator sets the individual's code number on a set of dials and . . .*

→ *. . . Marion V. Long, director of communications for the Olympic Winter Games, receives the Pagemaster call and reaches down to turn off the receiver.*



The change shown in these two pictures is typical of the cleanup achieved by placing large containers in Dothan's commercial and industrial areas.

Big Refuse Containers Pay Dividends

Dothan, Ala., puts large, portable refuse containers in its commercial area and improves sanitation, lowers cost and upgrades service in residential areas

By **R. POWELL BLACK**
City Manager
Dothan, Ala.

By changing our system of refuse collection and storage in the commercial and industrial sections, Dothan has been able to:

- **save a minimum of $50,000 per year,**
- **eliminate refuse-strewn areas in the business district, and**
- **improve service in residential districts.**

The backbone of the system is the use of two Dempster Dumpmaster collection bodies and 220 metal containers varying from half to eight cubic yards in capacity. The 24-yard compaction bodies are mounted on Ford tilt-cab trucks equipped with cab-o-scopes so the driver can watch the overhead dumping operation without leaving the cab.

We assigned the containers to the business houses on the basis of a survey made by Waste Control, Incorporated, of Atlanta, Ga. This survey determined the average yardage of waste material generated by the various businesses, thus enabling us to pick the proper size of container. Some adjustments were necessary following our initial installation.

The Dumpmaster requires only a driver for its operation. Each container is so placed that the driver can bring his vehicle to the container and engage the lifting fork into the side channels. Once this is done, the driver merely works the controls to lift the container and empty its contents into the truck. Packing may be accomplished either while the truck is standing still or moving to the next loading spot.

Normally the two new units are used solely for commercial and industrial collection. However, an open container may be carried in front on the lifting forks for use in residential collection, with the pick-up crews emptying the individual household containers into the one carried by the truck. This we have done on occasions when residential route trucks were being repaired or during emergency periods after the units have completed their regular commercial or industrial routes.

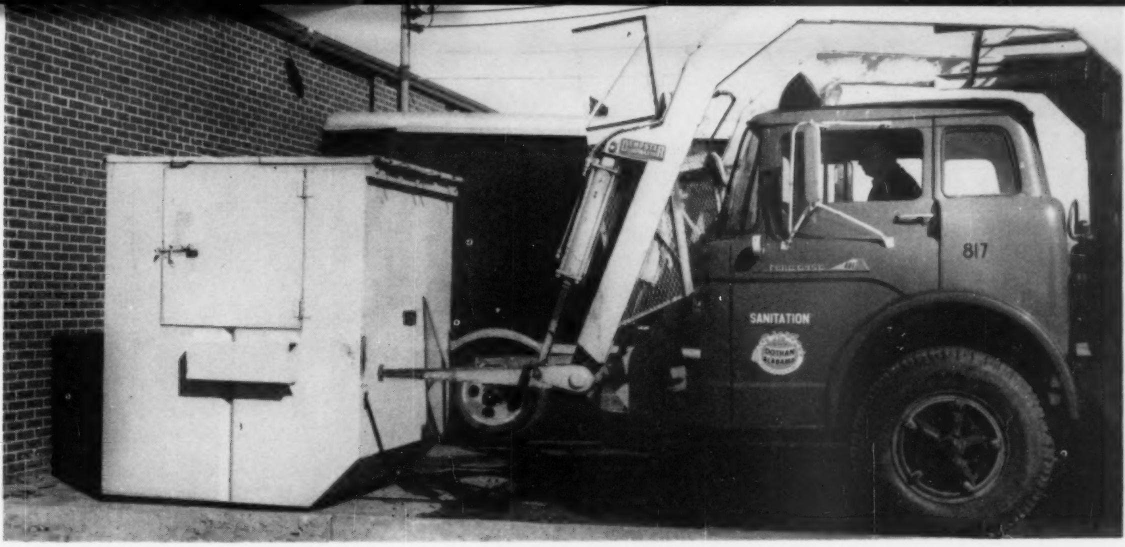
Residential Service

This sweeping change in the business areas, which put an end to piles of rubbish and numerous open containers at almost every stop, made mandatory a change in residential service as well. The method of collection remains the same, but we increased the frequency and established a definite schedule. Our people now know that if the schedule calls for collection on Tuesday, for example, they'll get it.

As for schedules, all residences now receive two garbage pickups a week, either on Monday and Thursday or Tuesday and Friday. Weekly trash and brush pickups are made on Wednesday. Before this, garbage collection was handled on a three-, two-, one-and no-service basis per week with brush and trash pickups made as a result of telephone calls to the sanitation department. The establishment of definite routes eliminated overlapping areas that formerly existed.

The city made one other change that has met with the approval of the citizenry. We now provide all sanitation employees with rain gear to eliminate time loss due to inclement weather.

Dothan, with a population of only 30,000, covers an area of 49 square miles. Although growth has been rapid, many homes are rather isolated in the outlying areas and therefore did not receive collection service. As the result of further study, these homes now receive weekly garbage-collection service.



Loading under the new system consists of driving the truck up to the container to engage the lifting fork . . .

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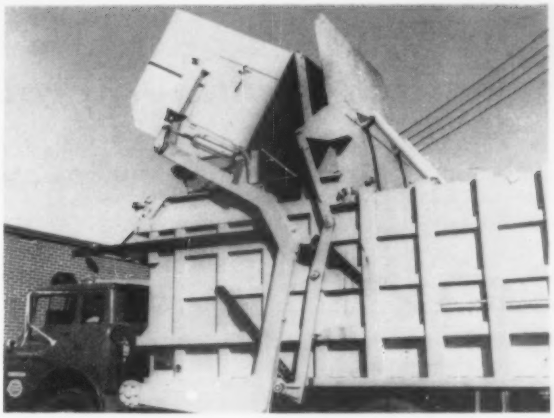
. . . and emptying the container into the truck body. One man handles the entire operation.



Here one of the units discharges its load of compacted refuse at the city's landfill disposal site.

Equipment for residential service consists of three Gar-Wood and one Pak-Mor packer-type units and four open trucks or scows. The packers have three-man crews and the open trucks have four-man crews, driver included.

Dothan uses the sanitary-landfill method of disposal, utilizing an International TD 15 Bullclam for this operation.

The entire new system, trucks and containers, cost us $77,360. However our savings will almost amount to this much in one year.

The old system required 51 men (14 drivers and 37 laborers) using 13 trucks, with one working a double shift. Now we use only 31 men, which means a saving of $50,000 per year in salaries and fringe benefits alone. With fewer trucks we will use less gas and oil and will reduce maintenance and truck replacement costs, adding to the already sizable saving.

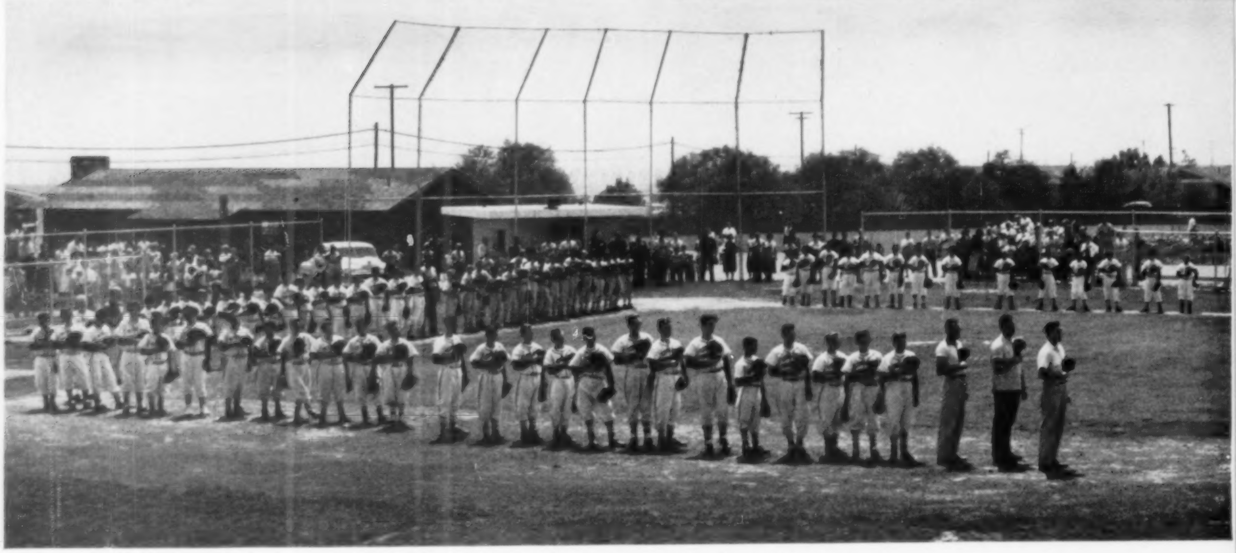
Besides reducing costs and improving residential collection service, our new Dempster-Dumpmaster container system provides the following:

1. **Neat, sanitary garbage storage that is rat-proof, flyproof, and fireproof.**
2. **Fully enclosed compaction bodies that reduce the number of trips to the disposal site and eliminate spillage.**
3. **Reduced hazards to personnel.**

The cost of the new system is paid for by the savings effected out of general funds, as is collection in the residential sections.

Adoption of the new system by the city commission was not a spur-of-the-moment action, but followed almost a year's study of various systems and city operations by the writer, assisted by Sanitation Superintendent G. J. Parrish, Jr., and Administrative Assistant Bill Bailey.

Our work is not yet complete, for we intend to experiment with residential service, and if we are successful, I believe a new era in garbage-collection will be on us. ◄



Covina's planned capital-improvements program has produced new parks like this one . . .

Planned Capital-Improvements Program

. . . turns into construction projects in Covina, Calif.

By **NEIL GOEDHARD**[*]
City Administrator

Each year the City of Covina devotes much of its budget to the planning and construction of public works and capital improvements. To make this programming effective, and to see that we get full value from our limited financial resources, we simply *have* to consider these projects well in advance of the budget year.

We begin with the Planning Commission to insure that the program complies with our city's general plan. The City Council has authorized the Commission to prepare a coordinated program of public works and capital improvements, based on recommendations from the various department heads within the city government.

Department Heads

For the 1960-61 Budget Preparation Calendar, department heads prepared their project lists between January 4th and January 29th. The Planning Commission then studied them between February 1st and March 18th. The coordinated list was returned to the respective department heads for inclusion of projects in their budget or fund requests. Between April 4th and May 2nd the department heads and the city administrator investigate, justify and review the work and project programs to determine final recommendations. This will enable the Finance Director to prepare the budget document with these items included, for submission to the City Council on June 1st. During June, the Council will consider the budget at public hearing meetings, and on July 5th adopt it, with any possible revisions.

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. . . plus new parking lots and improved streets . . .

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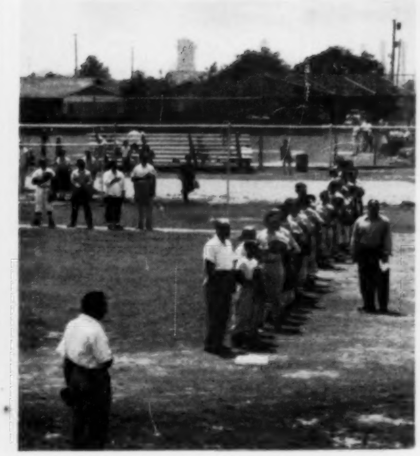
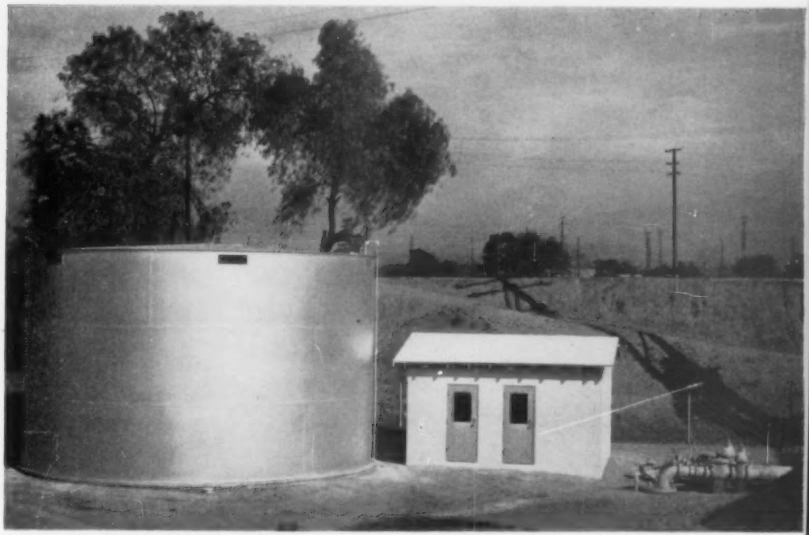
[*] Mr. Goedhard has been the City Administrator of Covina, Calif., since 1954 and durng this period the city has undergone its greatest growth. He has written frequently on municipal administration. Two of his articles that have appeared in THE AMERICAN CITY are "How to Evaluate Performance of City Employees" (December 1958, pp. 137-146) and "Administrative Assistants" (March 1959, p. 152).





. . . plus new water-storage and pumping facilities like this . . .

This general planning program is now four years old. It began on February 15, 1956, by enlisting the help of 65 citizens and 25 councilmen, planning commissioners, and administrative personnel. On the basis of their study, we determined what capital improvements would be required on a priority basis during the next six years. After 75 meetings and field trips involving 2,690 man-hours of investigation, this committee prepared a list of 54 capital improvements totaling $5,500,000, with recommended priorities, for presentation to the City Council.

Classification

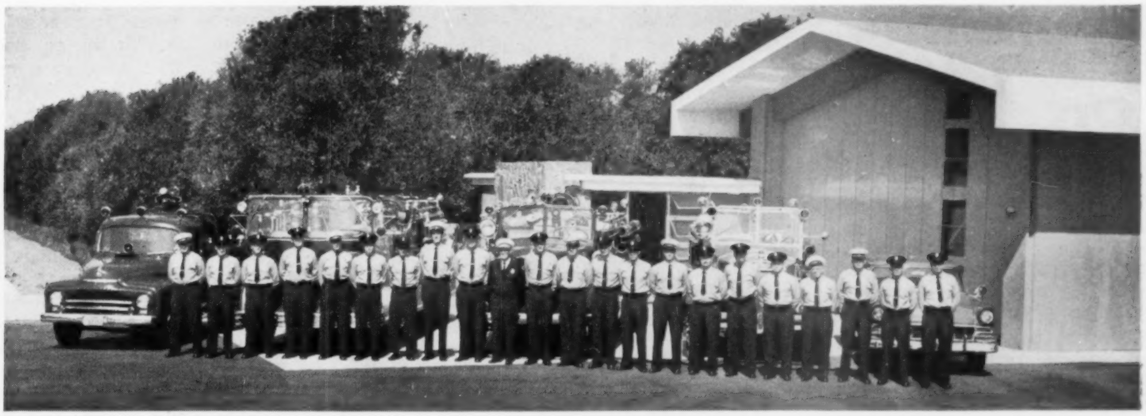
Those projects that the committee labeled "Urgent" involved capital investments of more than $2,100,000. These included the land-use, storm-drain, and sewer-engineering portions of a comprehensive master plan; a water reservoir; two branch fire stations; three off-street parking facilities providing 920 parking stalls; ten parks totaling 133 acres; a civic center site and city yard site.

Those labeled "Necessary" involved investments approaching $2,700,000. These included: four street improvements; a main police station and a main fire station; ten separate park improvements involving swimming pools and field houses; a new city hall; and a new main library.

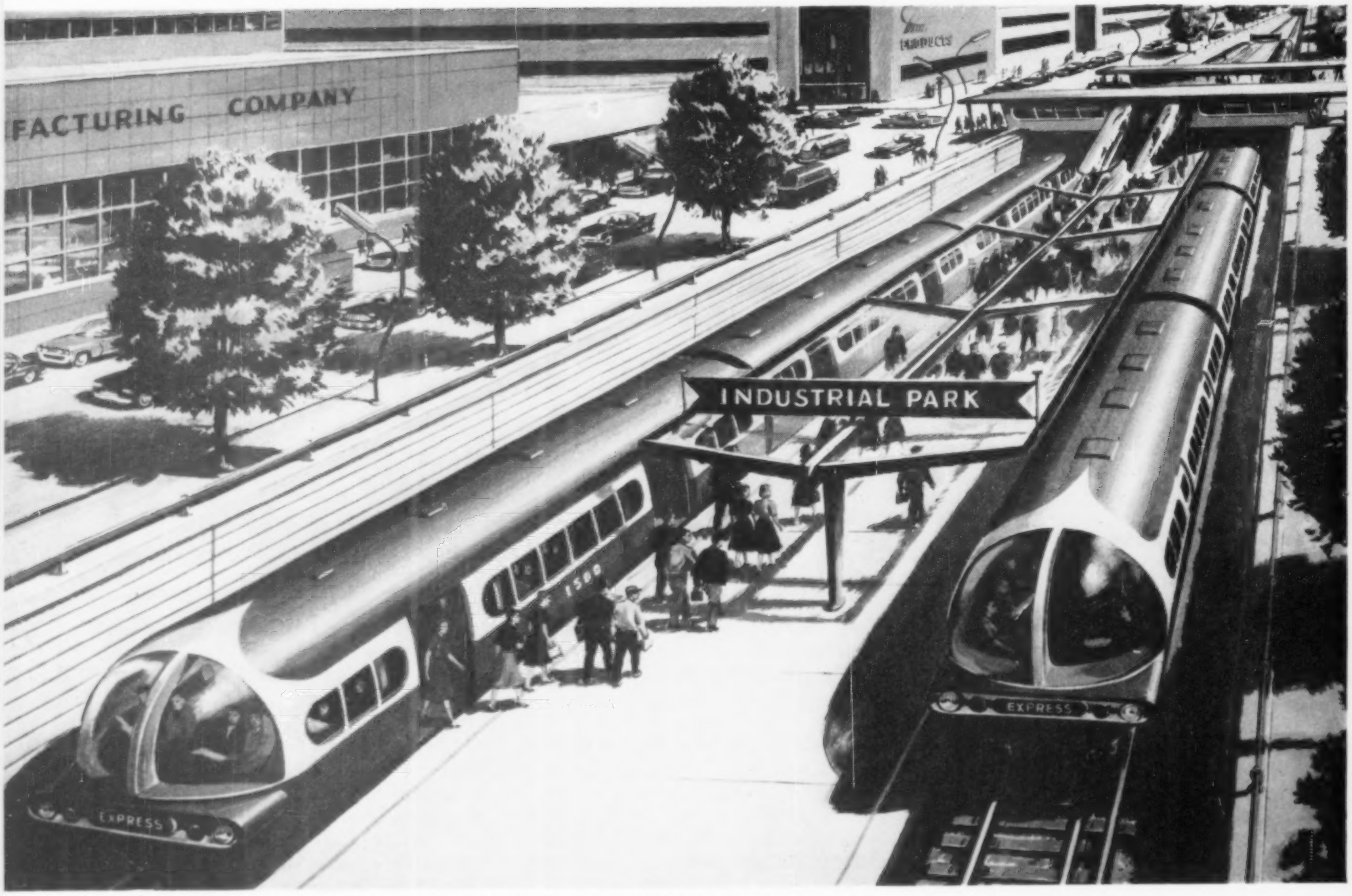
Those labeled "Future" involve projects whose costs are difficult to estimate, but do approach at least $700,000 and include: a branch library; five off-street parking facilities providing 803 stalls; two fire stations; six street improvements and a water reservoir.

To date the City of Covina has completed one million dollars of the improvements listed four years ago by the Capital Improvements Committee. These improvements have been installed on a pay-as-you-go basis and we are proud that our municipality has built these improvements without utilizing the "credit card" approach.

Even though the installation of these major costly capital improvements on the pay-as-you-go basis is a slow process in terms of completing all of the projects, nevertheless, the general feeling of the community is one of satisfaction with the current construction schedule and our citizens are confident that we have stretched our hard-earned dollars through sound plannng. ◄◄



. . . as well as new fire stations like this one.



This integrated rapid transit system, fed by buses and private cars, can move from three to 40 million people an hour to and from work.

Public Transit On Freeways

By **W. R. McCONOCHIE***

Need for improved transit service in our larger cities to combat growing traffic congestion has stimulated proposals for rapid transit facilities. Express service with conventional motor buses will be the most feasible type of operation for many years. Should the buses operate in the mixed traffic stream[1] or on exclusive rights-of-way?

The simplest design to provide for bus operation on freeways is to use the ramps available for general traffic at interchanges or other connections with the arterial street system. The principal attributes of this plan are: cost held to a minimum and passengers picked up and deposited at surface level where they can reach nearby destinations without climbing steps. This type of operation is recommended only for light routes which are not likely to develop beyond the 90-bus-per-hour level.

Downtown Terminals

The most serious objection to basing long-range plans for transit service on operation in the general traffic stream is that congestion on the freeway immediately affects the speed, dependability and regularity of the express bus service. If congestion occurs, as can be expected during morning and evening rush periods, use of the buses is discouraged.

The greatest problems of congestion and resultant delays to buses are likely to arise on the downtown distributors of the urban freeway system. The solution may well be to provide separate bus roadways as the central area is approached, these roadways either leading to off-street bus terminals or continuing

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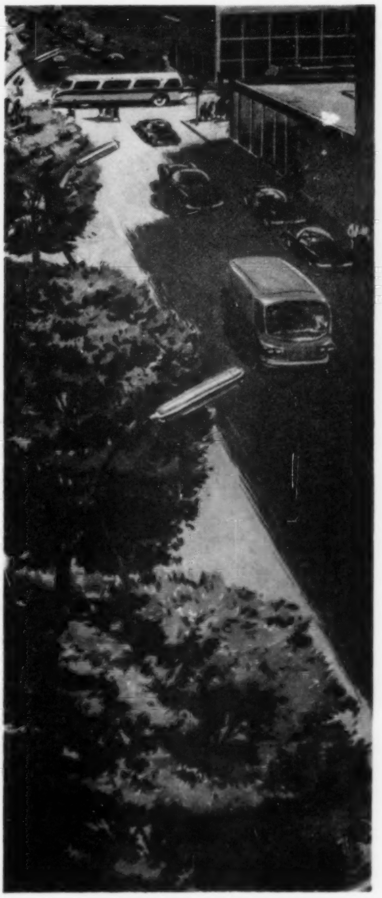
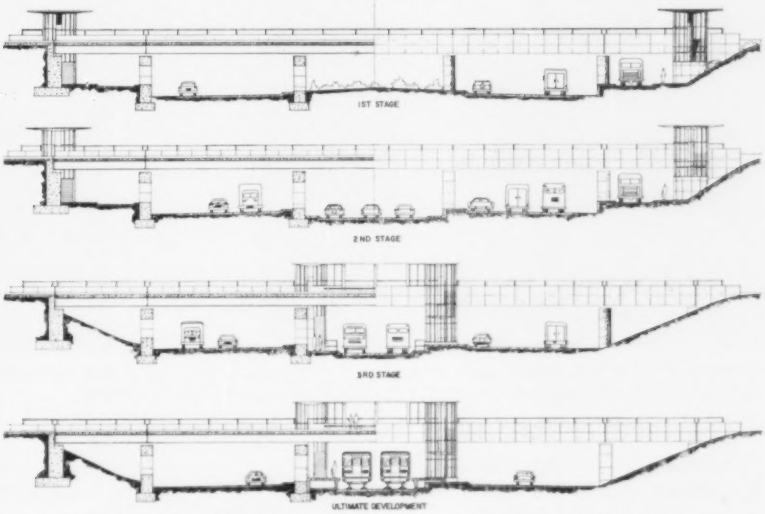
* Mr. McConochie is the Chief Engineer of the Traffic and Transit Department, De Leuw, Cather & Co., Chicago, Ill.



Rendering courtesy of the General Electric Company



Successive stages in the development of public transit on freeways.

as bus subways or other types of fully grade-separated and insulated rights-of-way to or through the heart of the business area.

There have been a number of proposals in a variety of forms for private bus roadways to permit express operation. It has been suggested that such roadways be built in a widened center mall of freeways; that they be built independently on structures in the centers of streets or in subways beneath the streets; that they be bracketed from existing buildings or otherwise supported above sidewalks or alleys; and that they pass through stores and office buildings in mid-block at the second- or third-story level. All of these are interesting possibilities, but they also entail sobering problems.

There may be justification, however, for leaving sufficient space in freeways now under design to permit future special bus roadways. The 64-foot center mall required by such design is 51 feet wider than the minimum formally specified on interstate and similar freeways in urban areas. The additional cost may be nominal, however, if street patterns, drainage problems, and other factors are favorable. In any event, such a plan is likely to be the only one that will provide a roadway for the exclusive use of transit vehicles on medium-density routes at an economically feasible cost.

In the first stage, as illustrated in the sketch, the additional width of the center mall could be used for landscaping. The highway would then have the appearance of the often-praised Westchester County parkways which were the forerunners of today's modern freeways. The profuse landscaping, while classed as temporary, might remain for 15 to 20 years before the land was needed for expansion of the transportation artery's capacity. Meanwhile, the wide spacing between opposing streams of traffic would be an added safety factor for users of the highway, and maintenance expense would be decreased in northern cities by using the malls for snow storage after heavy storms.

In the second stage, the wide center mall would be converted into a three-lane reversible roadway to increase the capacity for general highway traffic. It is presumed that buses would be operating in the general traffic stream in both stages 1 and 2 and that stations would be provided as required.

The center roadway would be converted in the third stage to two-way bus operation. The Chicago Transit Authority is doing preliminary experimental work on automated vehicles in anticipation of the day when it will be possible to operate driverless buses on such insulated freeways. Research engineers of a well-known manufacturer predict that the necessary

UTILIZATION OF FREEWAYS BY URBAN TRANSIT BUSES IN VARIOUS CITIES

City	Bus Route	*Miles of Route* Terminal to Terminal	*Miles of Route* On Freeway	*Rush Hour Service— Bus Speeds in Miles Per Hour* Express On Freeway	*Rush Hour Service— Bus Speeds in Miles Per Hour* Express Terminal to Terminal	*Rush Hour Service— Bus Speeds in Miles Per Hour* Local Terminal to Terminal
Atlanta	6 Lines	11.5	---	---	17	10
Chicago	#2—Hyde Park	8.5	5.5	36	23	16
	#5—Jeffery	14.0	5.5	36	13	10
	Outer Drive Express	11.5	6.5	38	13	10
	LaSalle Express	7.6	4.0	38	11	9.2
Cleveland	#39—Memorial Shoreway	---	8.5	21-24	18-20	---
	#55—Bulkley Blvd.	---	5.5	13	13	---
Dallas	5 Lines	---	1.3-3.7	---	---	---
Detroit	#33—Dearborn	---	3.8	32	18-20	14-15
	#41	---	6.7	40	18-20	14-15
	#58—Plymouth	---	4.6	19.2	18-20	---
Los Angeles	#44—Beverly	11.0	3.1	27	12	10
	#83	10.0	3.1	27	11-14	---
	#91	15	5.2	27	15	12.5
	#93—Express	---	8.0	23-30	18-20	---
	#93—Local	---	4.4	23-28	15-17	---
	#58	---	15.0	28	---	---
	#5	15.6	6.6	36	17-21	11.2
	#7	---	5.6	37	---	---
Pittsburgh	#22, #23 and #24		---	---	16.5-25.4	11.6-15.9
Oakland	Key System Transbay Lines (L)	13.69(L)	---	43	20-26	---
San Francisco	#30	---	3.6	---	---	---
	Greyhound to:					
	San Rafael	13	---	---	---	---
	San Mateo	11	---	---	28	---
	Redwood City	17	---	---	---	---
	San Jose	49	21	---	32	---

equipment will be perfected in about five years. Buses so equipped could be operated at much closer spacing and with resultant greater capacity than would be safe with human control. The design suggested in the figure would provide all of the necessary right-of-way and all of the other physical attributes to make fully automated bus operation possible.

In the final stage, or perhaps as an alternate to the automated bus stage, the proposed wide center mall would provide space for fixed-rail rapid transit running on steel rails; rubber tires on wooden stringers, as in the new Paris-type subway car; saddle-type monorail; or suspended monorail. The important step to take at this time is to make sure that space is reserved for almost any eventuality in the need for transit and for any type of vehicle that will be developed to meet that need.

On Chicago's Congress Street Expressway, the transit demand existed before the freeway was built, and the bus stage was omitted. The rail rapid transit facility is already carrying over 11,000 passengers in one direction in the peak hour on a single track. This represents an increase of about a third in the last year. The four-lane, one-way roadway alongside is congested when volume reaches 7,500 passengers per hour in autos.

Rights-of-way for express bus or rail rapid transit facilities may be found in some instances on abandoned railroad lines, alongside or above active railroads, or above or below existing streets. The most economical way to acquire space for express service transit facilities in most cities, however, is likely to be in connection with the building of urban freeways. ◄◄

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[1] The handbook issued by the American Association of State Highway Officials entitled "A Policy on Aerial Highways in Urban Areas" contains authoritative material on bus stops on freeways for buses operating in the mixed traffic stream; see pages 139 to 143, 357 to 372, and 435 to 437. Another helpful study has been prepared by Homburger and Kennedy of the Research Staff at the University of California, published June 1958 in a report entitled, "The Utilization of Freeways by Urban Transit Buses: A Nation-Wide Survey."

Crime Booming

Crimes against the person rose 7% in 1959 against property crimes' 1% rise, according to data from the police in cities over 25,000. The changes are: aggravated assault, up 7%; murder, up 5%; rape, up 4%. A preliminary survey of data shows a 1% increase in arrests for 1959 over 1958. Adult arrests showed no change but arrests of persons under 18 years of age rose 5%. The increase in juvenile arrests was the same in cities under 25,000 as in larger communities.

Quarterly reports such as this one issued by the FBI covering the calendar year 1959 are in the nature of preliminary data, released to make current data on crime in the United States available quickly. ◄◄

1. *A periscope flashlight will tell you whether a hydrant is drained or a valve is leaking.*

2. *This cigarette-pack-size leak detector is able to provide super-size performances.*

Some Practical Ideas

. . . on water distribution maintenance that can be used in any system, large or small

By H. W. NIEMEYER*

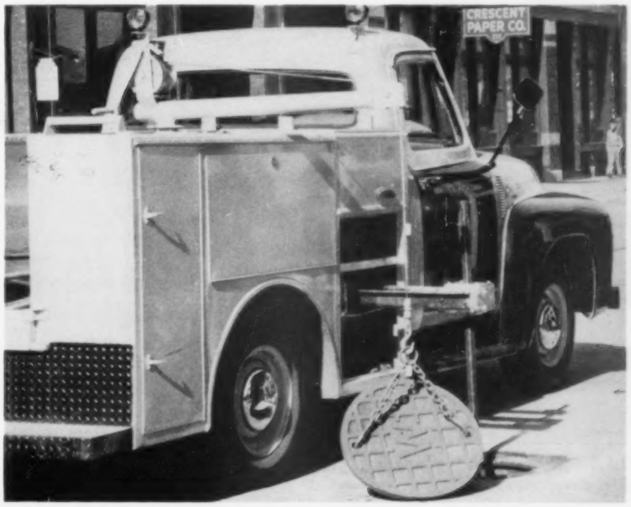
If you have the ability to work with tools and a broad streak of curiosity and resourcefulness, you can have a lot of fun in a water-distribution system. It gives you an excuse to visit machine shops, repair garages, electrical works, and even home-owners with "do-it-yourself" shops to get fresh ideas.

Take for example, the transistor-equipped "midget leak detector" (Photo 2), a tool we use in leak-investigation work. It is a compact sound amplifier which, when used with probe bars, is a tremendous help in spotting leaks. Notice that the headphones are almost as big as the detector itself.

The periscopic flash light (Photo 1) is a really handy gadget—the type of tool that, once you have used it, you wonder why you hadn't thought of it before. You slip this into the hydrant barrel, turn on the switch, and presto—you can see in an instant whether the hydrant is drained or the valve is leaking.

Now take the little subject of manhole lids (Photo 3). We always have found it cheaper to use

3. *You will have no smashed toes or strained backs lifting manhole covers this way.*



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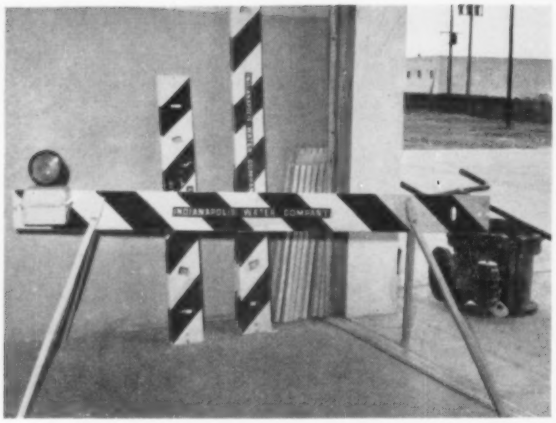
* Mr. Neimeyer, Superintendent of Distribution for the Indianapolis Water Company, is a mechanical engineer, a graduate of Purdue University. He has written extensively and authoritatively on the subjects of meters, tools, equipment, leak surveying and other water distribution problems. He has served on the AWWA committees on meter and valve specifications and has been chairman of the Distribution Division. He received the Fuller Award in 1951.

4. *Hydraulic pipe cutter that fits into a narrow trench, makes the cutting job simple and easy.*



5. *Metal barricades are easy to store, are tough, and are drilled for lanterns or flasher lights.*

mechanical power instead of muscles in as many places as possible. Following this policy, we have made a simple, home-made hoist to remove the muscle requirements from this somewhat dangerous task. The hoist lifts off the manhole cover so that the mechanical valve operator can start performing. Thus one man can do a job safely, easily and quickly. Three or four men formerly had to lift the cover and "walk down" the gate valve, and they had to work a lot harder.

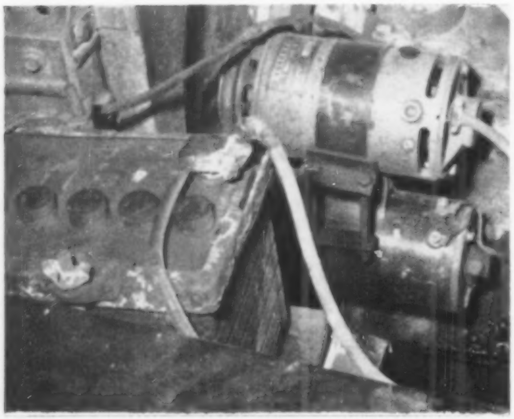
Consider the little matter of cutting pipe in a ditch (Photo 4). This used to be a messy, exasperating job; today, with our new hydraulic pipe cutter, you can cut the pipe and feel like an executive engineer while doing it. You don't have to widen the trench much. You slip the cutter around the pipe, then climb out of the trench and do the cutting by remote control, using the handle of a hydraulic pump. With this device, you can cut pipe up to 12 inches in diameter. You can get an attachment that permits cuts to 16 inches.

Barricades (Photo 5) also used to be a bulky nuisance to haul around and never were really convenient. However, we now have a multi-use barricade that really is a pleasure to handle. It is compact, easily assembled in various lengths for various applications. It has been predrilled for hanging lanterns or flashing lights. It is made of ⅛-inch steel and therefore is light and tough. One maintenance truck can haul 30 of these barricades around and still have plenty of room for other equipment.

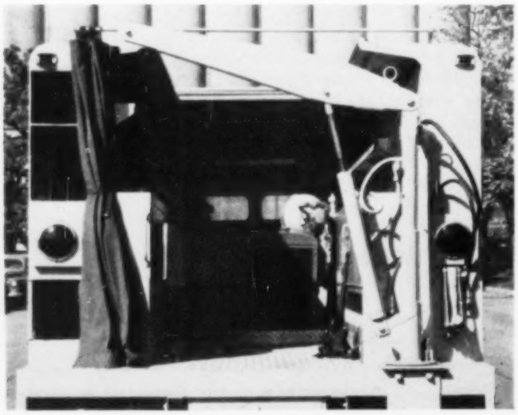
We have a simple meter-repair bench (Photo 6) that any water works, no matter how small, can copy. Moreover it is strictly Hoosier home-made. We took a steel repair bench, standard almost anywhere, and placed a peg-board cabinet on it that puts all parts, tools and facilities required for the repair of a ⅝-inch meter within easy reach of the repairman. The peg board is ¼-inch hard-board panel with holes and supports drilled especially for the meter repairman's requirements.

Plastic curb boxes (Photo 7) provide some interesting benefits. Since they are light, they are easy to handle. They also are convenient to store since they are packed five to a carton. The tricky feature about them is that the plastic lid has two magnets in it which attract a dipping needle even better than cast-iron boxes. We are now using them on a test basis only.

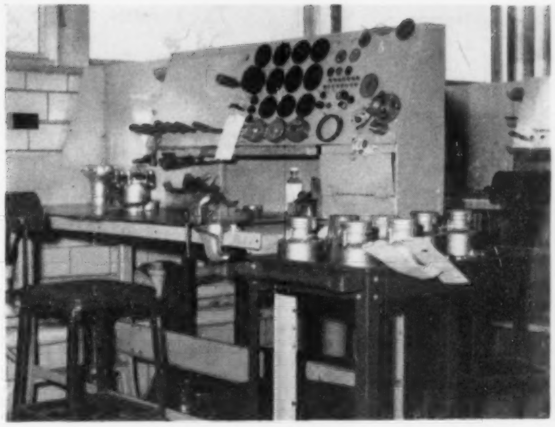
Then there is the little matter of extra electrical power that is so



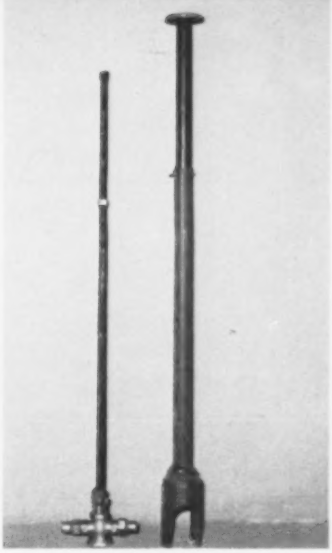
8. *A "piggy-back" generator gives extra power for emergency lighting and small power tools.*



9. *This truck-mounted hydraulic hoist will lift as much as 1,000 pounds.*



6. *A meter repair man has all tools and parts within arm's reach when using this meter repair bench.*



7. *This plastic curb box is light, easily stored, and has two magnets in the lid to attract dipping needles and make the boxes easy to find.*

often needed (Photo 8). We have provided it permanently on some of our trucks. The power source is a 2,090-watt, 110-volt AC generator mounted "piggy back" on the car or truck generator. It provides a ready source of power for emergency lighting and small power tools.

I've never seen a maintenance truck yet that couldn't use a hydraulic hoist to good advantage (Photo 9). We have a simple one that can lift as much as 1,000 pounds and it takes care of most assignments. It operates through a simple hand-lever arrangement. We mount ours on the rear of our maintenance trucks.

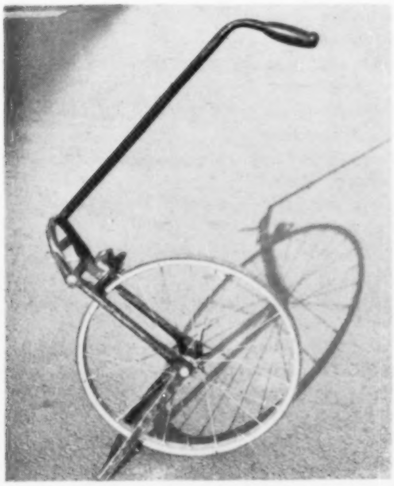
The Rolatape walking measuring wheel (Photo 10) is another of those ridiculously simple gadgets that once you have one you wonder how you ever got along without it. With it, one man becomes a "survey" crew, at least as far as measuring distances is concerned. He can do an accurate job, too.

An electronic spark-plug tester (Photo 11) has been a big help to us in keeping our maintenance trucks in good shape. The one we use is a lightweight, easy-to-read, scope-type tester that quickly checks the condition of spark plugs as well as the over-all efficiency of the ignition system.

The service box cleaner (Photo 12) is another one of those handy "gizmos" that take the annoyance out of water maintenance work. This long-handled tool lets a man reach down into a curb box and conveniently pick out a rock or other object.

A good diaphragm-type trench pump (Photo 13) is a life-saver to any maintenance crew. As long as the law of gravity remains unchanged, trenches will be wet, muddy, full of sand and gravel, disagreeable to work in and difficult to pump out. We relieve this condition by using a compact, relatively lightweight (120 pounds) portable trench pump of the diaphragm type, with a three-inch opening. It will remove water containing mud, sand, and other solids, with remarkable ease. It is ideal for leak-correction.

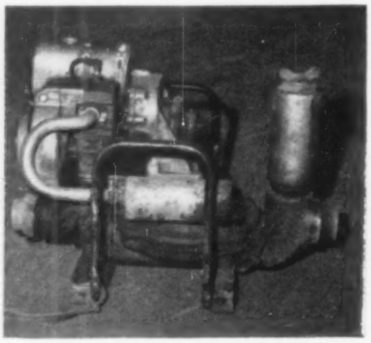
Probe bars (Photo 14) represent another example of tools that are simple, not subject to breakdown and wonderfully handy. Anyone who has ever tried to find a buried pipe and who doesn't have the peculiar gift of "dowsing" (a subject we will not argue about here), knows that he needs every tool he can get: electronic detectors, accurate records, good references from known points on the ground, and then a really effective metal probe



10. *This measuring wheel permits one man to be a chaining crew.*

11. *This scope-type tester keeps spark plugs—and engines—in top condition.*

12. *A simple way to remove rocks and other objects from curb boxes.*



13. *A diaphragm pump that easily draws muddy or sandy water from repair ditches.*

14. *The weighted handles make these probe bars easy to drive and pull.*

bar. The weighted handles of these bars will drive the bars down and pull them out. We use them chiefly when we probe for leaks.

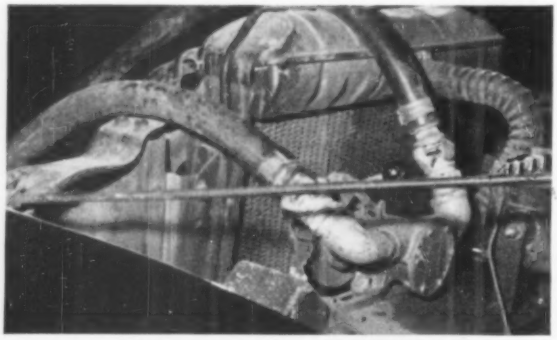
A small pump mounted on a car or truck engine (Photo 15) is our final "good idea." You will be surprised how often it is used. It is always ready, and is excellent for clear-water pumping, such as is required to empty meter pits, valve pits, hydrant barrels. The pumps can be obtained in two sizes: 27.6 gpm, and 54.9 gpm. This is precise rating but we never argue with the engineers.

These are all relatively inexpensive aids, most of which can be applied by any maintenance crew, regardless of the size of the water utility. Leaks are no respecters of water systems. Trenches have to be excavated and barricades erected wherever water is distributed. If these ideas help others, we are glad to present them. If anyone else has similar gadgets, we'd like to know about them.

Very few good ideas spring full-blown, unaided, from the furrowed brow of any scientist, engineer, or maintenance man. One generally picks up the shred of an idea here and there, then one morning wakes up saying, "Why didn't I think of that before?" Also the reverse happens all too often. You try some method and you find that you can't make it work. Next, you advise everyone that it won't work, may even write a paper on how bad it is. Then one of your foremen goes out into the field, tries the same method or tool and makes it work like a charm.

We never are too old to learn, and in this business, learning is lots of fun. ◄◄

EDITOR'S NOTE: Mr. Niemeyer's article is based on an informal, slide-illustrated talk he presented before the recent Indiana Section meeting, American Water Works Association, held in Indianapolis.

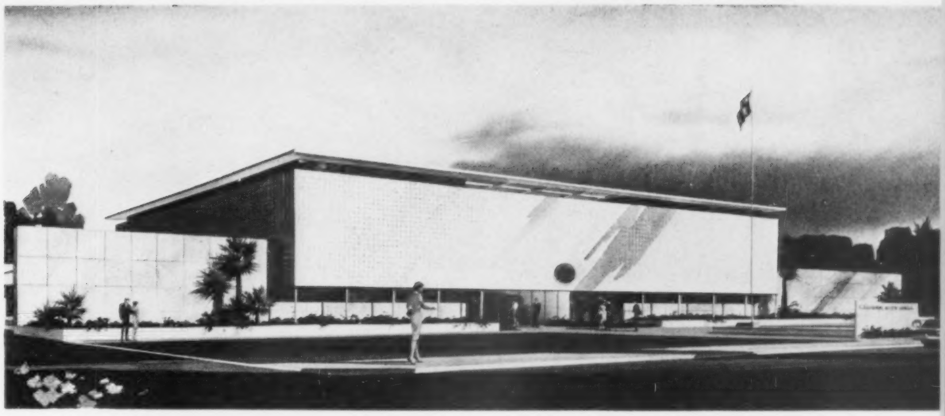


15. *Put a small pump like this on your car or truck engine and see how often you will use it.*

Equipment Inventory

USED BY THE INDIANAPOLIS WATER COMPANY

Photo 1 —Midget leak detector. Fisher Research Laboratory, Palo Alto, Calif.
Photo 2 —Periscope flashlight. Laging Schultz, Mountain Lake, Minn.
Photo 4 —Hydraulic pipe cutter. Wheeler Mfg. Co., Ashtabula, Ohio.
Photo 5 —Metal barricades. Barricade Engineering, Milwaukee, Wis.
Photo 7 —Plastic curb box. Handley-Brown Co., Jackson, Mich.
Photo 8 —Motor power generator. Motor Light, Inc., Kansas City, Mo.
Photo 9 —Hydraulic hoist. Stratton Equipment Co., Cleveland, Ohio.
Photo 10—Measuring wheel. Rolatape, Inc., Santa Monica 2, Calif.
Photo 11—Electronic spark-plug tester. Champion Spark Plug Company, Toledo, Ohio.
Photo 13—Diaphragm trench pump. Homelite Corp., Port Chester, N. Y.
Photo 15—Engine-mounted pump. Jabsco Pump Co., Costa Mesa, Calif.



Alhambra's new city hall with its terra cotta pierced grille that completely surrounds the two-story building with an open air space.

Alhambra's New City Hall

By **A. B. STEPHENSON**
City Manager

There probably isn't another type of civic structure whose design and materials place a city's officials and an architect under as much pressure as does a city hall. Alhambra, Calif., has a new one going up, designed by William Allen, A.I.A., of Los Angeles, to cost more than $900,000 out of the city's general tax funds.

During the 47 years since our existing city hall was built, the business functions of cities have changed. Many cities now own municipal utilities. Building codes have come and grown. Central purchasing departments now do a large annual business. Parks and recreation departments are far more extensive than in the past.

Designer William Allen

Despite the obsolescence of an old city hall, the designer of a new one must keep one eye on the old building's present space problems. If anything goes wrong with the new space allocations, the difficulty may have its inception in the old unit.

In setting up the formula for calculating space requirements, the starting point was the determination of how much space should have been available at the time of the study. This was done by Mr. Allen through interviews with the heads of all departments, plus consideration of the needs of a civil defense department.

Step two consisted of assembling all available data which would show the trend of the city's growth in population, retail trade, industry, and dwellings. Account has also to be taken of the most likely volume of future growth and of the height and size of new apartment buildings. These factors are important because Alhambra, due to its closeness and over-all civic advantages, is a much sought-after living area for thousands of Los Angeles employees.

The New City Hall

An interesting design feature is the absence of "rear" or "side" doors. The main structure is encompassed by a pierced terra cotta screen grille in white with a green cast. It stands out from the building 3½ feet on all sides, is 21 feet high and starts nine feet above the sidewalk level. Aside from its aesthetic properties, the grille will be a shield from sun glare and heat and an aid to the building's air-conditioning system.

A basement will house most of the mechanical equipment and a civil defense unit. The first floor will contain the walnut-paneled main lobby flanked on one side by the engineering and water departments and on the other by the offices of the city clerk, treasurer and building department. The second floor will house the council, administrative offices, personnel department and employee's lounge on one side, and the purchasing and city attorney's departments on the other. On this floor and directly over the first-floor lobby will be the 120-seat council chambers.

The offices have been grouped in their relationship to each other and placed on the two floors with regard for the frequency of their use by the public and to make them readily accessible and convenient for all using them.

By nature of its growth, Alhambra has been unique. The incorporated area of about 7½ square miles is surrounded by other communities and apparently has no expansion through annexation left to it. Nevertheless, dwellings have increased by 16% during the last eight years while population has risen by 9%. This growth has come largely through rezoning and by replacing single-family residences with multiple units. ◄◄

A Cat-12 motor grader windrows partially mixed granite-asphalt topping as a Seaman-Andwall Trav-L-Plant follows with final mixing.

The crushed aggregate ready for spreading and oiling. Mixing will follow as shown in the photo at the left.

City Road-Mixes and Stores Its Topping

Pacific Grove, Calif., road-mixes bituminous surfacing material, transports it to public works yard in quantity and stores it, ready for use

By **M. M. FRITSCHLE***
City Manager

A handy quarry of decomposed granite, a stretch of woods-lined road and the right equipment have allowed Pacific Grove, Calif., to shave more than a third from the cost of commercial plant-mix during its road-surfacing program.

The beginning of the city's program came when rising costs of material and labor forced development of the quarry as the source of aggregate. The availability of a hard surface, lightly traveled road in a privately owned reserve where the road-mix operation could be installed also helped.

Recent experiments with overlays for street-improvement projects and with surfacing for municipal parking lots throughout business and beach areas indicate that the material will stand up with the best of the commercially available plant-mix of aggregate and SC-2 or SC-3 asphalt.

The fact that applied surfacing—especially in the parking lots—is placed cold, and that for the most part it has been traffic-compacted, places the city-produced, cheaper material at a comparative advantage to the commercial material.

Procedure

Quarried, decomposed granite is hauled to the road, spread on the hard surface and crushed to fine-aggregate size with a Huber-Warco 8-10-ton tandem roller. The crushed aggregate then receives 20 gallons of SC-2 (slow-curing) asphalt per cubic yard sprayed on a 4-inch-thick blanket of the granite.

Following the oiler is a Seaman-Andwall Trav-L-Plant mixer which thoroughly mixes the material on the road. The Trav-L-Plant is followed by a Cat-12 motor grader, which blades the mixed material into a long windrow. The material is then hauled to the public works storage yard for stockpiling until needed.

Use of the SC-2 asphalt allows long periods of storage before its application. For example, material that was road-mixed in May 1959 was laid down in one of the city's parking lots in June and Richard H. Sullivan, then director of public works, reported a highly satisfactory job.

The granite-asphalt topping on this particular job was placed and spread over the surface of the lot and plastic markers were set for traffic control. Final compaction was provided by the cars themselves, and the topping cured to a hard, durable surface in a very short time.

Had the city used commercially available material the cost would have been about $6 a cubic yard, but the total per-yard cost of the granite asphalt topping was $3.70. Road mixing and storing has paid off handsomely, especially since the city is using the material in quantity for both road and parking-lot resurfacing. ◄◄

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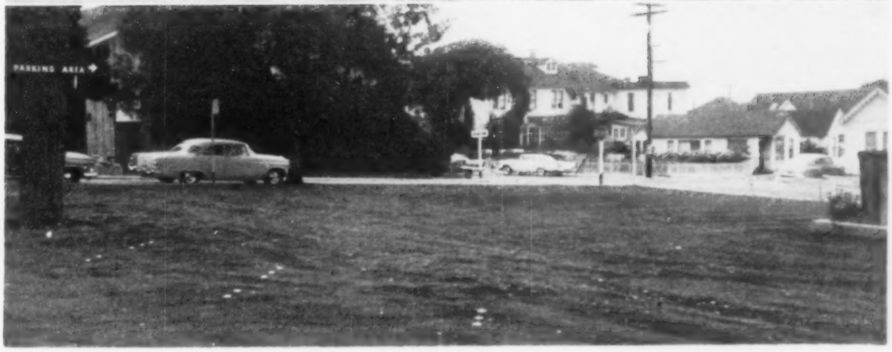
* Mr. Fritschle received a B.S. in civil engineering from Oregon State College and an M.S. in civil engineering-administration from Stanford University. He became Director of Public Works and Assistant City Manager of Pacific Grove in 1954. In 1957 he assumed the duties of City Manager.

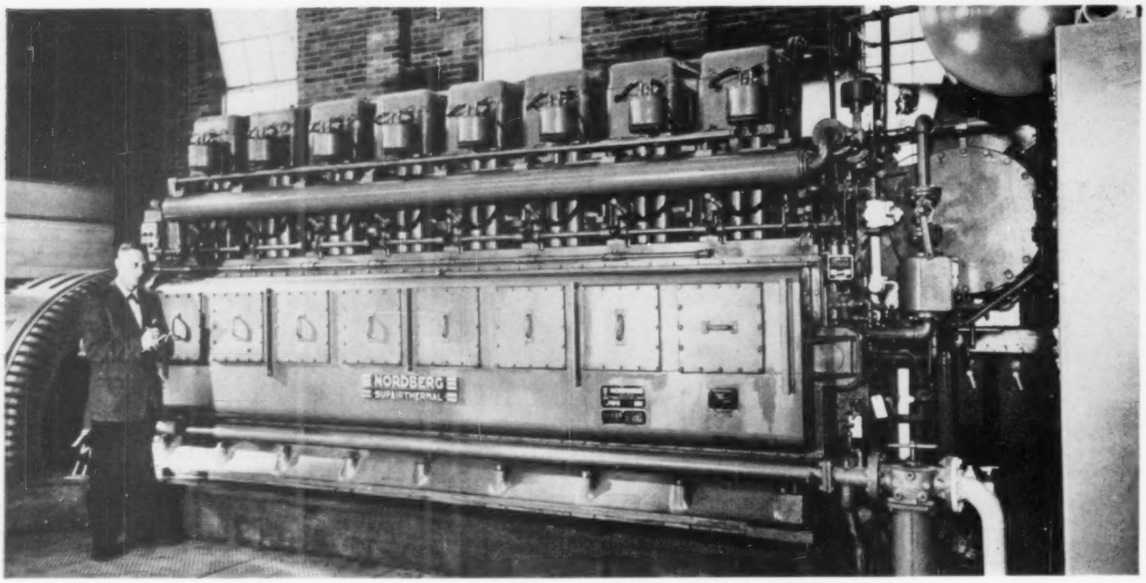
This road-mixed topping is ready for transportation to the storage yard.

The stored material is stockpiled in public works yard, ready for future use.

The street topping has been placed (foreground) and will cure and compact to a hard surface.



The parking lot surface has been spread and plastic markers set. Final compaction will be provided by the automobiles.



The author checks Liberty's newest engine, one of two units that produce one horsepower-hour on as little as 5,725 BTU of natural gas fuel.

New Engines Slash Fuel Costs

By **FRANK HANCOCK***
City Manager

Paced by two new Nordberg spark-fired, natural gas engines, the Liberty, Tex., municipal power plant has cut fuel costs to a new low plant average of 2.81 mills per kilowatt hour. This represents a 23% cost reduction for the fiscal year ending September 1959.

When, in 1939, Liberty started a new municipal plant with a pair of 200-kw gas engines, the city, serving mostly surrounding ranches and farms, had about 3,000 residents.

Up to that time, the area had been served by a private utility company and the city entered into residential and commercial power competition in a frank effort to supplement tax income with power profits. Today, the city carries about half the power load, including most of the residential consumers. Originally, city and company rates were identical but today the city's are a shade lower.

Plant expansion has followed the classic pattern since World War II. Another 200-kw engine was installed in 1946 and a pair of 350-kw units followed in 1948. Growth was stimulated when, in 1951, an oil field was discovered. In 1952, a 920-kw dual-fuel engine was installed, bringing plant capacity to 2,200 kw. But peak load moved up too, and soon it was necessary to run the largest engine most of the time.

Big Units Turn Tide

Consulting engineer A. L. Hogan, Jr., recommended substantial expansion to provide firm capacity and to turn a major share of production over to newer, more economical natural-gas engines. The first step in the recommended program was installation, in 1957, of a Nordberg Supairthermal, high-compression gas engine. The eight-cylinder unit, with 13-inch bore and 16½-inch stroke, is rated 1,600-hp at 450 rpm and drives an Ideal Electric & Mfg. Co. 1,135-kw generator.

Then, in January 1959, a second, identical Nordberg-Ideal combination began power production. Tests indicate very high efficiency levels. For example, the contract with the engine builder guaranteed full-load performance at 6,800-BTU input per horsepower-hour. The engineers conducted a test in the Liberty plant in February 1959, and recorded full-load fuel consumption of only 5,837 BTU per hph, 14.2% better than the guarantee.

Figures reported during the tests are shown in the table.

In addition to these efficiencies, the 1,135-kw engine carried a load of 1,320 kw successfully.

The responsiveness of the engine to load variations and the high thermal efficiency are attributed to the high expansion ratio and to variable timing. Both Nordberg engines are now similarly arranged.

The overall plant figures show the improvement in efficiency as the two new engines take over the bulk of the load. In the 1959 fiscal year, the #7 engine carried most of the load, operating for 6,096 hours. Though #8 was in service only part of the year, it was on the line for 3,657 hours. The 950-kw dual-fuel unit #6 provided 1,891 hours, followed by the two 350-kw engines with a combined total of 2,549. The trio of 200-kw units together produced only 479 hours of operation.

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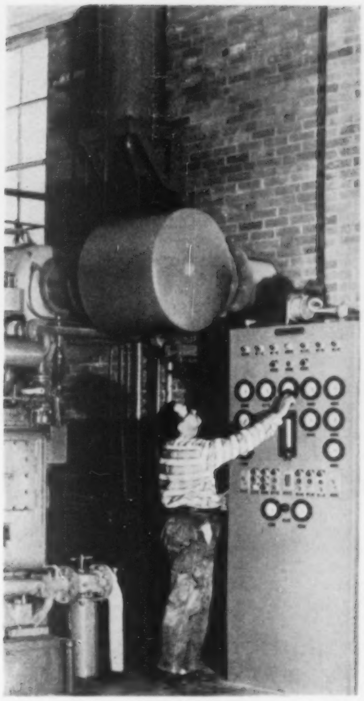
* Mr. Hancock has served three years as City Manager of Liberty. Prior to this post he served the city two years as Superintendent of Utilities, and before that he spent two years as Coordinator of Public Works.

Economy lives here—the power plant that, during the 1958-59 fiscal year, cut average costs from 3.65 mills to 2.81 mills per kwh.



Near the new Nordberg engine is a complete gauge, alarm and auxiliary control panel.

Thus, the two new engines handled more than 80% (estimated) of total plant production.

During the past fiscal year, the plant generated 8,852,000 kwh at a total fuel cost of $25,072.68, an average of 2.81 mills per kwh, thus 0.84 mills (23%) were shaved from the 3.65-mill average cost the preceding year.

The plant has succeeded in improving municipal services and helped hold tax rates down. In addition to cash contributions to the city general fund, the Light and Power Department installs, maintains and supplies electricity for all street lights for a nominal fee of $3,500 per year. This value, at utility rates, was more than $11,000 last year. Free current was supplied to three sewage lift stations, and power supplied to the treatment plant was billed at half-price. City officials have decided that in the future, the plant will meter and bill for all electricity supplied to other city departments and use the added profit to increase contributions to the general fund. The purpose of this change in bookkeeping is to enable both officials and citizens to see clearly the size of contributions received by the city.

Close automatic control of air, gas, oil and water earn much of the credit for engine efficiency and ease of operation.

With the new engines, air is drawn through American Air Filter Co. oil-bath filters to a De Laval exhaust-driven turbo-charger that discharges through a Young intercooler into the cylinder inlet valves. Since cold water for the intercooler is essential, a separate, induced-draft Marley Aquatower, Allis-Chalmers circulating pumps and Fulton Sylphon thermostatic valves have been provided.

Fan-Cooled Radiator

A Young fan-cooled radiator cools engine jacket water that is circulated through the engine and radiator by a motor-driven centrifugal pump. A similar pump circulates water through a shell-and-tube lube oil cooler and another set of coils in the radiator. Automatic thermostatic control valves regulate temperatures of oil and water. Bypasses and variable-speed fan permit precise control.

Natural gas is abundant in the region but an emergency supply of propane gas, ready for instant use, has been provided. Gas is admitted to each cylinder through a separate valve, controlled by individual actuator pumps which are in turn controlled with air intake valves by a Woodward governor. Thus, optimum air-fuel ratios are achieved at all load levels. A variable ignition-timing device assures maximum operating efficiency over the full load range.

Controls are provided in two panels, one holding a voltage regulator, switchgear, electric meters, synchroscope and governor controls, the other, an exhaust pyrometer, alarms with indicator lights, gauges and controls for auxiliary equipment.

Liberty's population now stands at 8,000, having doubled in the past decade. With its two new engines, the power plant has more than doubled its output capacity since 1957. Peak load in August 1959 topped an unprecedented 2,450 kw but with its enlarged plant the city has proved its ability to supply increasing demands. ◄◄

TEST RESULTS

% Load	*Contract BTU/bhp hr*	*Field Test BTU/bhp hr*	*% Above Requirement*
50	8,000	6,631	17.1
75	7,200	6,048	16.0
100	6,800	5,837	14.2
110	-----	5,725	-----

From a swamp like this . . .

. . . came Swan Lake Iris Gardens.

One Man's Dream—A City's Eden

Sumter, S. C., now carries on operation and improvement of Swan Lake Iris Gardens

By **WADE KOLB***, City Manager and
SIM P. WRIGHT*, Director of Parks & Recreation

A dream, born more than 30 years ago in a black cypress swamp on the outskirts of Sumter, S. C., has literally blossomed into an internationally famous garden spot. The products of that dream are now the pride — and the responsibility — of the city's Department of Parks and Recreation.

H. C. Bland, a Sumter automobile dealer, once stood in the swamp and, impressed by the wildness, the variety of plants, wild life and the black water, wondered whether he could improve on nature's work. Later, in 1927, he purchased the original tract and enlisted the aid of others in developing it.

Even in the early days, municipal officials, personnel and equipment played a major role in the project. As the gardens developed and their fame spread, Sumter derived so many benefits that special concessions seemed in order. The loan of city personnel and equipment during slack periods expedited the program. Council action in voting this aid to the project was considered justified, especially since Mr. Bland had publicly expressed the desire to present the Gardens to Sumter when he retired.

Whenever affairs of business permitted, Mr. Bland collected native and exotic plants, traveled extensively and consulted experts on flowers, shrubs and trees. On one such trip, he consulted with the late George M. Reed, Curator of Plant Pathology at the Brooklyn (N. Y.) Botanical Gardens—a recognized authority on the Japanese iris.

Dr. Reed was directly responsible for the profusion of these plants in the Swan Lake Gardens. Some Japanese iris rhizomes were dumped with garden trash on an island in the lake, and the following spring they bloomed and thrived in the rich moist swamp soil. Now they number in the thousands throughout the swampier areas of the gardens.

According to Mr. Bland, many attempt every year to describe the iris, but while "some of the descriptions are fair, they never have done justice to that beauty found along the banks of Swan Lake."

Years after he started developing the original tract, Mr. Bland took over the design and development of an adjoining piece of land that was deeded to the city by another Sumter citizen, A. T. Heath and the size of the gardens was increased.

Gradually, islands and rustic bridges have been built with special care to retain the completely na-

City Manager Kolb, Founder Bland and Caretaker Spitzer (right) examine a parasite taken from one of the Japanese iris plants and held by Director of Parks and Recreation Sim P. Wright.

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* Mr. Kolb was City Clerk and Treasurer for the City of Sumter before becoming City Manager in 1952. Mr. Wright has held his present position since 1956.

The swans in the background seem concerned about lawn trimming around the lake.

tural environment of the area. Oaks, pines and magnolia trees provide a background for crepe myrtle, Judas dogwood and Japanese magnolia. Brilliant yellow jasmine, woodbine and wisteria add a riot of color. There are youpan and camphor trees, yellow sugar maple and red Japanese maple. And for fragrance, there are bull bay, gardenia and glauca magnolias. These are but a few of the plant species that attract visitors to Swan Lake Iris Gardens every year.

Just before his retirement from the automotive business, Mr. Bland deeded the entire original tract to the city to be administered and maintained by municipal officials, personnel and equipment. Both the original portion and that donated by Mr. Heath were dedicated in 1956.

Under the direction and supervision of Sumter's Parks and Recreation Department, the Gardens continue to develop. The city's park crew uses a durable 31-inch Toro lawnmower to cut grass in large open areas. Diseased or unwanted trees are cut down and a Vermeer stump cutter is used to remove stumps. The crew protects pine trees from pine bark beetles by spraying an insecticide with a 100-gallon John Bean power sprayer which is mounted on a Ford pickup truck.

Swans

The white English swans and the black Australian swans that glide over the lake and ponds are products of years of experimentation. After several disappointing efforts, success in hand-raising the birds has been achieved. The mortality rates have been high, primarily because opossum, raccoon—and people—take a heavy toll of the young cygnets before they reach maturity.

By watching nesting swans and transferring cygnets to brooders at the first opportunity, many of them have been saved. The city sells them to other communities, commercial establishments and private buyers for between $200 and $300 per pair, depending upon the color.

Other wildlife in the Gardens are native land birds (including quail), native water fowl, Chinese geese, mink, opossum, rabbits, raccoon and squirrels.

The city force maintaining the gardens for the Department of Parks and Recreation is a crew of four laborers under Caretaker George H. Spitzer. Mr. Bland visits the gardens almost daily and is still very active on a designing and consulting basis. ◄◄

A Vermeer stump cutter eliminates stumps without tearing up the ground.

SWAN LAKE
GARDENS
FREE PARKING

This power sprayer is used to protect the park's trees from pine bark beetles.

Small Towns Can Afford Planning

The prohibitive cost of developing a comprehensive master plan forced Keosauqua, Iowa, to settle for the next best thing—engineering reconnaissance and a schedule

By **DONALD E. FRENCH***

The simultaneous proposal, about a year ago, of three major improvement projects by three individual groups—each convinced that its project was more urgently needed than the others—provided the spur for a new order of planning in Keosauqua, Iowa. The town (1,101 population) had struggled along until that time taking care of emergencies and urgently needed improvements as troubles developed.

Town officials, and they have been able, progressive men, had long been aware that this method of scheduling improvements often proved more expensive over a long period. But there have never been funds available for the extensive engineering studies, solid cost estimates, firm cartography, or the manpower necessary to prepare even the most basic master plan.

Small towns, particularly those serving rural areas, have not all shared in the growth and prosperity experienced in most of the larger communities. Many have no capital-improvement program, whatsoever. Their improvement needs often have been deferred until the task of catching up appears almost impossible. The need for careful planning is essential because projects planned hurriedly, with little consideration given to needs of other facilities, invariably leave many important questions unanswered. We present a few that are basic:

Should this project have first priority? Most obvious needs should not always be satisfied first. Towns have completed a street-resurfacing project without first investigating storm drainage and underground utilities. Residents and businesses fronting on these "new" streets enjoyed them for only a short time.

Will proposed methods of financing handicap the financing of future projects? A town recently financed improvements to its water system through sale of general-obligation bonds instead of revenue bonds. A badly needed city hall and fire station will not be built because of the state-imposed limitation on general obligation bonds.

When will future projects be constructed? A bond issue for improvement of a sewage treatment works recently was defeated because taxpayers were more interested in extensions and improvements of collecting sewers. When they were assured that sewer extensions would be built immediately after treatment facilities were provided, they voted for the treatment project by an overwhelming majority.

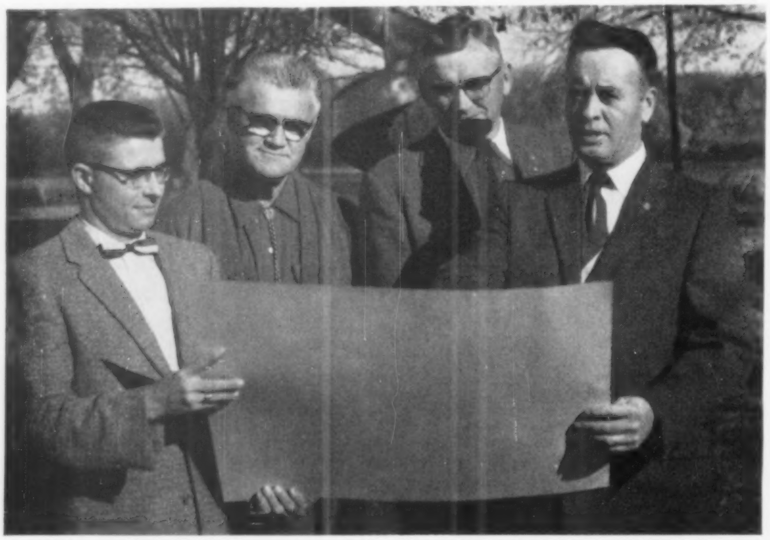
When the author, as the town's consulting engineer, proposed development of a Capital Improvement Schedule, both he and the town officials recognized two severely limiting conditions. 1) speed was essential, and 2) only a few hundred dollars could be spent for it.

Civic Cooperation

The first step was a background study to determine population and economic trends in the community during preceding years. To save time and money the townspeople undertook the job as a civic service.

The Commercial Club (a civic organization) made the population study covering not only the number of residents, but age groupings as well. The economic indicators used were retail sales, bank deposits, postal cancellations, utility hook-ups and utility income.

The next step was development of criteria for assigning priorities to



Planning and scheduling have improved the Town Park on the banks of the Des Moines River. Councilmen Robinson, Nelson and Barker (left to right) compare land and paper improvements with Keosauqua's Mayor Gene Hannam.

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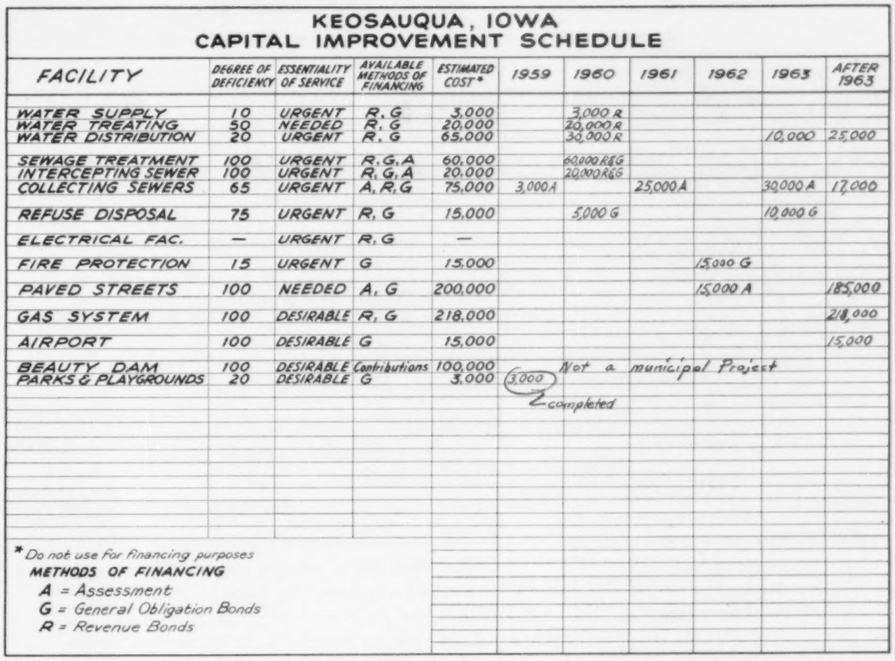
* Mr. French's firm, Donald E. French & Associates of Kahoka, Missouri, consulting engineers for Keosauqua, devised a low-cost capital-improvement schedule—the first planning tool for the town.



KEOSAUQUA, IOWA
CAPITAL IMPROVEMENT SCHEDULE

FACILITY	DEGREE OF DEFICIENCY	ESSENTIALITY OF SERVICE	AVAILABLE METHODS OF FINANCING	ESTIMATED COST*	1959	1960	1961	1962	1963	AFTER 1963
WATER SUPPLY	10	URGENT	R, G	3,000		3,000 R				
WATER TREATING	50	NEEDED	R, G	20,000		20,000 R				
WATER DISTRIBUTION	20	URGENT	R, G	65,000		30,000 R			10,000	25,000
SEWAGE TREATMENT	100	URGENT	R, G, A	60,000		60,000 R&G				
INTERCEPTING SEWER	100	URGENT	R, G, A	20,000		20,000 R&G				
COLLECTING SEWERS	65	URGENT	A, R, G	75,000	3,000 A		25,000 A		30,000 A	17,000
REFUSE DISPOSAL	75	URGENT	R, G	15,000		5,000 G			10,000 G	
ELECTRICAL FAC.	—	URGENT	R, G	—						
FIRE PROTECTION	15	URGENT	G	15,000				15,000 G		
PAVED STREETS	100	NEEDED	A, G	200,000				15,000 A		185,000
GAS SYSTEM	100	DESIRABLE	R, G	218,000						218,000
AIRPORT	100	DESIRABLE	G	15,000						15,000
BEAUTY DAM	100	DESIRABLE	Contributions	100,000		Not a municipal Project				
PARKS & PLAYGROUNDS	20	DESIRABLE	G	3,000	3,000 completed					

* Do not use for financing purposes

METHODS OF FINANCING

A = Assessment
G = General Obligation Bonds
R = Revenue Bonds

Result of the engineering reconnaissance was a schedule of improvements to provide a worksheet for the town officials and the engineering consultant.

various projects. These were mostly governed by the deficiency of a facility and its indespensability.

The degree of deficiency was estimated quantitatively and expressed as a percentage. The indispensability of service was expressed qualitatively in the following classifications:

***Urgent*—Services that are essential to the community's survival.**

Needed—Services required for the community's continued well-being.

***Desirable*—Services that, while not necessary for survival, will make the community a better place in which to live and that will contribute to its future well-being.**

Other factors, such as relative costs of projects and physical priorities (underground facilities before streets, etc.) were considered.

The heart of the study was the preparation of an *Inventory of Needs.* This attempted to include all capital-improvement needs for the foreseeable future. Some, not highly essential at present (an air strip, for example) might become more important as times change. The inventory includes a brief discussion of each need, the indispensability of each service, a description of existing facilities, an estimate of the degree of deficiency and an estimate of the cost of correcting it.

Emphasis was placed on quick results at low cost, rather than a high degree of precision in estimates. Substantial savings, both in time and expense, resulted from basing this portion of the study upon an engineering reconnaissance rather than a detailed study. Since Keosauqua is a small town, it was possible to forego extensive engineering studies and arrive at reasonable estimates by such a reconnaissance. In most cases, this consisted of a brief inspection, study of available maps and plans and interviews with the superintendent of utilities.

Estimates were in the form of "educated guesses" but they served to indicate the general magnitude of expenditures needed. While not accurate enough for arranging financing, they helped in determining priorities between projects.

The report also included a brief discussion of available methods for financing each type of improvement.

The final step in the procedure was to assemble all data in tabulation form. Assignment of priorities and scheduling of projects was done by the town council after discussions with the engineer and the town's legal and financial advisor.

The schedule will be reviewed each year and updated or corrected as necessary. Approximately two years before the scheduled construction date, the engineer will be instructed to make a preliminary engineering study, including a true estimate of project cost to be used in making financial arrangements.

In addition to providing for an orderly development of municipal facilities, the schedule has had several indirect benefits. It has served to pinpoint strong points as well as weak ones. It was noted, for example, that Keosauqua offers exceptional opportunities for outdoor recreation. The schedule has provided a "point of departure" for public support of proposed projects.

A Method of Approach

The schedule is not regarded as a final, unalterable plan. It is a working tool—a method of approach—to help the town council maintain a logical program of improvements.

It is not a substitute for complete comprehensive planning — there is no such substitute. However, this type of study will enable towns that cannot finance a more complete plan to have an orderly program to develop their capital improvements.

A year ago, if a citizen had asked Mayor Gene Hannam when a certain municipal improvement was slated for construction, he'd have said, "I don't know." Now, he glances at a report on his desk and says, "water and sewage treatment facilities are slated for construction in 1960. Extensions to collecting sewers will be tackled in 1961, and street paving will be deferred until after 1963." The best part of it is, questions about priorities are answered immediately by the schedule itself. ◄◄

Low Cost Public Project Forms

By **PAT THOMSON***
County Engineer

The maintenance, construction, and administrative operation of a million-dollar county highway department consumes a large volume of forms in various statements, reports, specification sheets, and repair orders. Here in our Douglas County, Wash., department, printed specification sheets are often outdated within 30 days. Specifications now have to be written specifically for each project. Since only a limited number of contractors bid on each project, it is practically impossible to have specification sheets printed commercially. We tried—and ended up with some pretty expensive scratch pads.

Using a "lavender ink" machine proved impractical since this type of ink faded, smeared, and became illegible. And nothing can bring about interminable argument and prospective law suits quicker than unreadable contract specifications. This is particularly true in these portions of the contract involving the expenditure of the contractor's money. Consequently, one big demand here was readibility, permanence, and low production cost.

Special Forms

In the operation of our office, repair shops, and drafting rooms, we have devised individual forms to meet our needs. Commercial printing ran $15 to $22 per thousand sheets. We were almost constantly in contention with the printer over prices.

Then we agreed to a demonstration arranged by Miss Fletcher, our secretary. As a result, our office purchased an A. B. Dick Model 435 electric mimeograph, stencils, and supplies.

We can now produce any form that we need or desire for less than $7 per thousand. At the cost of a single stencil, we can run off 100 copies of a new form to see what we obtain. Now we feel free to revise any form. For the permanent type of form such as our claims voucher, where considerable quantity is needed, we have a photo-chemical stencil produced. From such a stencil, we have duplicated over 50,000 legible copies.

Every division of our multiple operation now uses some type of A. B. Dick mimeographed form. As a nice by-product, we have been commended by the state auditing department for the completeness, accuracy, and speed of our daily and monthly account-reporting. ◄◄

Secretary Fletcher and the mimeograph machine are ready to run off a new Douglas County project form.

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* Mr. Thomson, whose office is located in Wenatchee, Wash., told more about his county and its public works problems in THE AMERICAN CITY, September 1959, p. 101.

City Salaries in the Pittsburgh Area

The Institute of Local Government of the University of Pittsburgh has published a detailed survey of wage and salary programs in 125 boroughs of the Pittsburgh Metropolitan Area. The survey reports data for 42 classes of borough employees, including police, public works, general administration, parks and recreation and utilities. It also specifies fringe benefits in many of the communities. The boroughs are classed by population, and some salaries are shown in this table.

The survey was made in conjunction with the Pennsylvania State Association of Boroughs. It can be obtained by writing the Institute of Local Government, University of Pittsburgh, Pittsburgh 13, Pa., for Information Bulletin 1-596. The price is $1 a copy. ◄◄

Position	Monthly Salary				
	Less than 5,000 pop.	5,000 to 9,999 pop.	10,000 to 14,999 pop.	15,000 to 24,999 pop.	25,000 or over pop.
Manager					
Low	600.00	200.00	————	666.67	————
Average	673.50	581.76	————	750.00	————
High	816.00	900.00	583.33*	833.34	1,000.00*
Street Commissioner					
Low	140.00	300.00	393.78	367.50	525.00
Average	352.55	397.53	448.36	417.74	547.33
High	540.00	440.00	500.00	491.00	580.00
Police Chief					
Low	175.00	336.00	400.00	390.00	475.00
Average	372.94	435.07	471.03	463.23	521.66
High	525.00	566.67	581.25	540.00	600.00

* Only one municipality involved.

Soluble Iron

. . . and how to remove it from public water supplies

Clogged pipes, such as the one shown here, are but one of the problems caused by iron dissolved in water.

By **MAX U. PRIESTER***

Iron, dissolved in water, is troublesome. Sometimes, the water absorbs the iron from the earth itself. Other times soluble iron can be introduced to water by corrosion of pipe lines and tanks Also, there are micro-organisms which adhere to steel and iron and produce organic acids in their metabolic processes; these organic acids attack the metal to dissolve iron and this in turn increases the soluble iron content of the water in contact with the metal.

The presence of a significant quantity of iron in water is detrimental to many industries. It discolors their products, interferes with chemical reactions, and often this soluble iron ruins products entirely.

Iron also causes trouble when it deposits in pipe lines, valves, and heat-exchange equipment. It induces corrosion from localized electrolytic cells set up by the difference in potential between deposited iron oxide and the metal to which the deposits are adhering.

The U. S. Public Health Service says that water should not be used for drinking when the total iron (Fe) and manganese (Mn) exceeds 0.3 ppm.

Insoluble iron, along with mud, silt, sand and other insolubles can be removed by recognized methods of coagulation, sedimentation and filtration, or combinations thereof. The removal of soluble iron, however, is more difficult.

Ferrous Iron Removal

Iron can be precipitated in the ferrous state as ferrous hydroxide, $Fe(OH)_2$, by the addition of lime or caustic soda. This introduces the hydroxyl ion (OH) in dilute concentrations to a pH greater than 9. This causes the iron to precipitate as shown by the following reaction in which caustic is used as the example.

$$Fe(HCO_3)_2 + 2NaOH \rightarrow Fe(OH)_2 + 2NaHCO_3$$

Ferrous Bicarbonate + Sodium Hydroxide → Ferrous Hydroxide + Sodium Bicarbonate

This method of ferrous iron removal is of academic interest only because the solubility of ferrous hydroxide is about 6 ppm where ordinary iron removal requirements dictate reduction of iron to less than 0.1 ppm. In practice, ferrous iron is oxidized to the ferric state and precipitated as ferric hydroxide $Fe(OH)_3$, the solubility of which is considerably under 0.1 ppm

Ion exchange, the only method in general use for iron removal in the ferrous state, removes iron by cation exchange either on the sodium or hydrogen cycles. The following reaction illustrates the removal of iron by sodium zeolite:

$$Fe(HCO_3)_2 + Na_2Z \rightarrow FeZ + 2NaHCO_3$$

Ferrous Bicarbonate + Sodium Zeolite → Ferrous Zeolite + Sodium Bicarbonate

Softening and removal of all divalent and trivalent cations are also accomplished in this process. If the iron content is appreciable (above 2-3 ppm) after continued use some of the iron will precipitate on the zeolite grains and in the zeolite bed due to oxidation from ferrous to ferric iron by air getting into the system. When this precipitation occurs the zeolite usually experiences a reduction in exchange capacity making it necessary to clean the mineral.

The zeolites in common use on the sodium cycle are resinous styrene base, carbonaceous and the greensands, both standard and high capacity. Iron can be removed from the resinous and carbonaceous zeolites by treatment with acid, usually about 4% hydrochloric. If the iron content of the influent water is above 2 ppm, the softener internals should be corrosion resistant and the tank lined so that the zeolite can be acid-cleaned in the tank without the necessity of removing it. Acid cleaning is only necessary periodically, eliminating the need for costly lining, although the lining should be the equivalent of hot bitumastic or better.

Greensand zeolites cannot be acid-cleaned without chemical deterioration. Therefore, where softeners are also to function as iron removal units, resinous or carbonaceous zeolite must be specified. Several non-acidic cleaners can be used for greensand. These also contain algicides which loosen organic growths from the zeolite in addition to the iron. Where softening is not required or desired, and the hardness of the water is appreciable, it is usually more economical to remove iron by one of the oxidation methods.

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*Mr. Priester is Co-Director, Consulting Services Division of Betz Laboratories, Inc. He received his B.S. in Sanitary Engineering from Pennsylvania State University. He was engaged in both municipal and industrial water and waste treatment for 29 years and has been associated with Betz Laboratories since 1944.

Removal of Ferric Iron

Iron removal in the ferric state involves oxidizing the iron from the ferrous to ferric state followed by precipitation of the ferric iron and usually filtration.

Soluble ferrous iron can be catalytically oxidized, precipitated and filtered by passing the water through a bed of material containing manganic and sometimes ferric oxides. The water must contain sufficient oxygen to combine with ferrous iron to convert it to the ferric state.

The equipment usually involved is similar to ordinary pressure or gravity filters. If the water contains insufficient oxygen, an aeration system must be installed ahead of the units containing the catalyst. This aeration system can be as simple as a "sniffler" valve on the suction side of the pump allowing air to be drawn into the water if the pressure on the suction side of the pump is below atmospheric. Either pressure or open aerators are also adaptable.

The actual catalyst usually consists of sand or anthracite coal coated with manganic and ferric compounds. Crushed pyrolusite (MnO_2) has been used. The catalyst together with oxygen causes precipitation of ferric hydroxide which is filtered out on the bed. After the pressure drop through the bed reaches a predetermined point, the unit is backwashed for about ten to fifteen minutes to remove the accumulation of ferric hydroxide.

The bed depth normally employed is in the range of 30 to 36 inches supported on a graded sand and gravel bed of 12 to 15 inches. The service flow rate may be 4 gpm per square foot of bed area. The backwash rate depends upon the density of the material and the water temperature. An average rate for backwash would range from 12 to 15 gpm per square foot for suitable bed expansion at a water temperature of 60°F.

This method of iron removal has limitations in that hydrogen sulfide should be absent, the water temperature should be less than 160°F, organic material should not exceed 5 ppm and there should be sufficient oxygen in the water to oxidize all the ferrous iron to the ferric state. Also, it is possible that in time the catalyst will lose its efficiency due to coating, in which case, it will be necessary to rejuvenate or replace the bed.

The use of manganese zeolite is one of the most common methods of catalytic oxidation for iron removal. It is produced by regenerating greensand with manganous chloride or sulfate and then regenerating with potassium permanganate to produce manganic oxides in the zeolite. These manganic oxides oxidize ferrous iron to the ferric state with subsequent precipitation. The manganese zeolite bed then acts as a filter to remove the precipitated ferric iron. When the oxidizing capacity of the bed is exhausted, it is backwashed at a rate of about 8-9 gpm per square foot, regenerated with approximately 1¼ ounces of potassium permanganate per cubic foot of zeolite, rinsed and then put back in service.

The exchange capacity of the zeolite averages between 700 and 800 grains of iron when regenerated with 1¼ ounces of potassium permangate per cubic foot of zeolite. As an example of regenerant operating cost, the permanganate requirements would approximate 0.75 cents to remove 5 ppm of iron from 1,000 gallons of water.

This method of iron removal also has limitations in that it is not advisable for use where the iron content is above 10 ppm. Another limitation is pH, for manganese zeolite is most effective at a pH close to 7. Many waters containing appreciable concentrations of iron are well waters with a low pH due to a high concentration of carbon dioxide. Let us suppose that we have a water

(Continued on page 189)

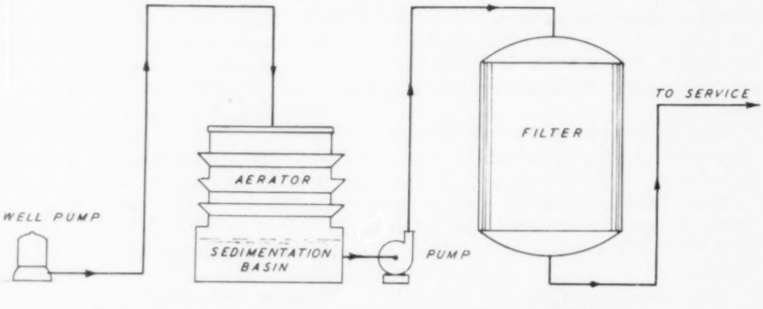


Figure I—Iron removal by aeration, settling and filtration.

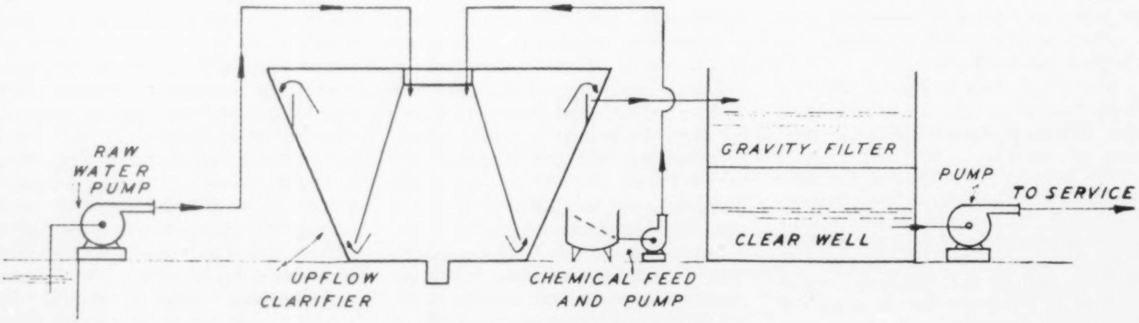
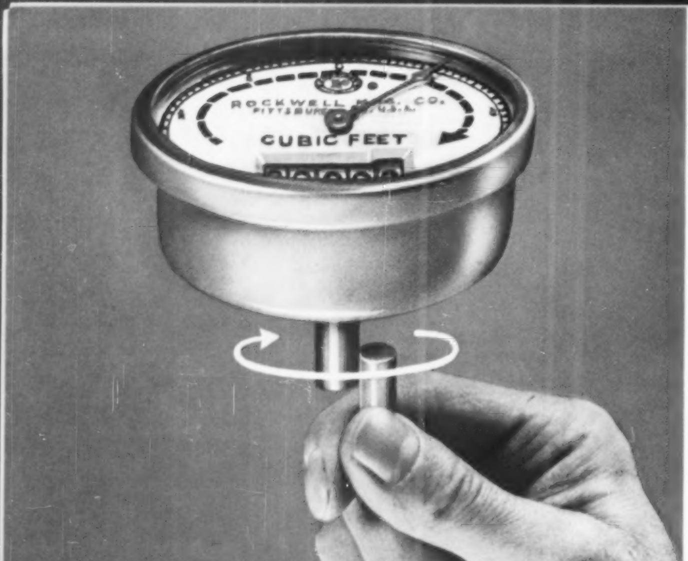


Figure II—Iron removal by lime treatment.

MAGNETIC ATTRACTION!

the impelling force in ROCKWELL SEALED REGISTER WATER METERS



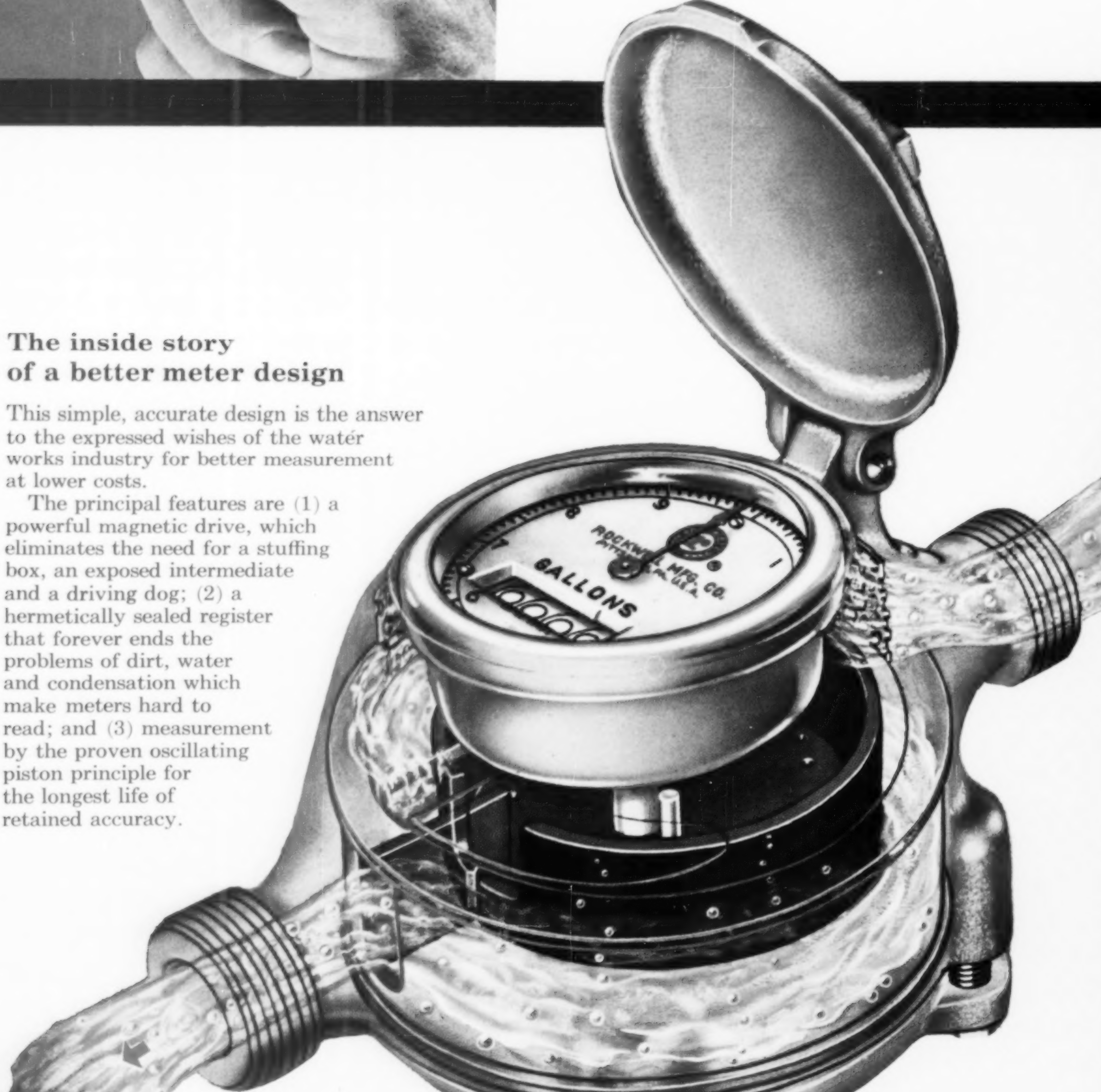
How magnetic attraction drives the register

This simple diagram shows how the driver magnet (shown in hand) revolves around a water-tight compartment at the base of the register. This driver magnet is in the center of the oscillating piston (see below). The sealed compartment around which it revolves encloses the follower magnet. The follower then pushes a crankshaft to transmit every motion of the piston to the sealed gearing and registering mechanism.

The inside story of a better meter design

This simple, accurate design is the answer to the expressed wishes of the water works industry for better measurement at lower costs.

The principal features are (1) a powerful magnetic drive, which eliminates the need for a stuffing box, an exposed intermediate and a driving dog; (2) a hermetically sealed register that forever ends the problems of dirt, water and condensation which make meters hard to read; and (3) measurement by the proven oscillating piston principle for the longest life of retained accuracy.

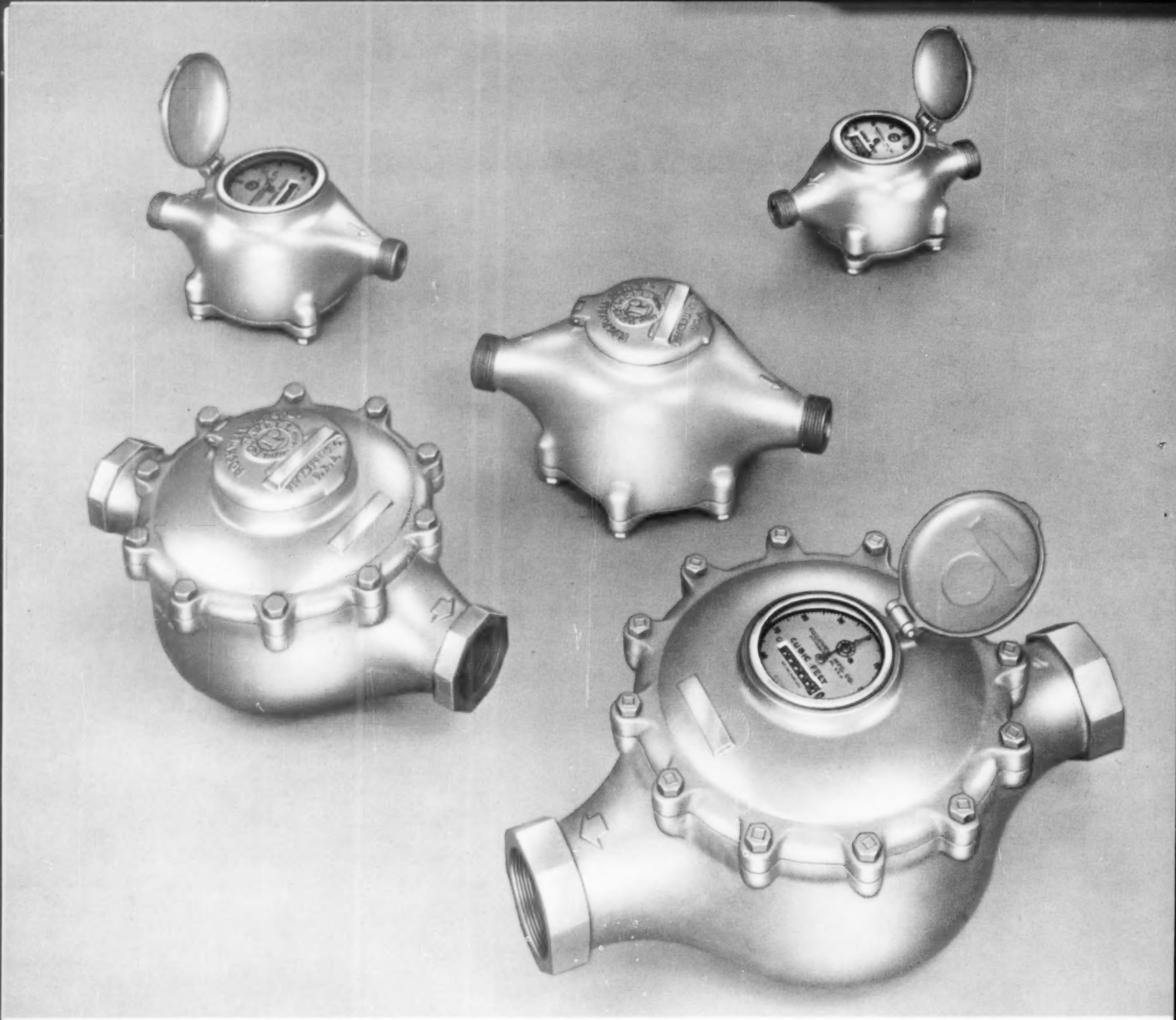

ROCKWELL MFG. CO.
PITTSBURGH PA. U.S.A.
GALLONS

Here's the answer to your requests for larger sizes of Rockwell sealed register meters

Ever since the Rockwell Sealed Register meter was introduced in the ⅝-inch size, users have asked that line be extended to provide the same benefits to the measurement of larger services.

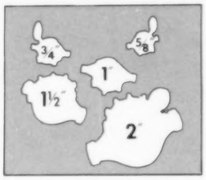
Now, with the introduction of the 1½-inch and 2-inch sizes, the line is complete. These two sizes differ from the ⅝-inch, ¾-inch and 1-inch meters only in that they are made with split cases. All other features—sealed register, magnetic drive, oscillating piston, etc., remain the same, although, of course, "beefed-up" dimensionally for the larger volumes involved. Even in these larger sizes, practically friction-free operation provides extreme accuracy on low flows. This advantage, obtainable in no other displacement meter, will in many cases permit the use of Rockwell Sealed Register meters in place of more costly and complicated compound meters. Just try them and see.

1½ and 2 inch sizes



How you benefit from this

Complete line of magnetic meters



All Rockwell Sealed Register meters in all sizes have the same exclusive magnetic drive principle. All are patterned around the same simple construction. The only differences are in proportions which are directly graduated according to size. This means that for your every service—from ⅝-inch all the way up to 2-inch—you can benefit from a meter design that has been proved in thousands of installations to be more accurate, durable and offers lower (and fewer) repair costs.

Take your pick! No matter what size Sealed Register meter you select you will never again need to service a stuffing box—for there are none. You can always read these meters, too, for the hermetically sealed register stays clean, dry and free from condensation.

In this simple design there are only two moving parts that run in water. It's truly the *least vulnerable* meter ever and one that can be dismantled and assembled with only a wrench.

How much does all this cost you? *No more than you would pay for ordinary meters!* Write Rockwell Manufacturing Company, 400 N. Lexington Avenue, Pittsburgh 8, Pa. In Canada: Rockwell Manufacturing Company of Canada, Ltd., P.O. Box 420, Guelph, Ont.

SEALED REGISTER METERS

another fine product by

ROCKWELL

New Unit to Improve Commuter Rail Service

Mayor Richardson Dilworth has announced detailed plans for a nonprofit corporation to furnish low-cost, frequent service on commuter trains serving Philadelphia.

He made the announcement jointly with Walter W. Patchell, vice-president for special services of the Pennsylvania Railroad, and Joseph A. Fisher, president of the Reading Railroad.

City Solicitor David Berger has filed papers with the Common Pleas Court formally creating the new agency. Named the Passenger Service Improvement Corporation of Philadelphia (PSICP), it is the first agency of its kind in the nation. It absorbs "Operation Northwest" and "Operation Northeast," which offered residents in these sections of the city 30-cent train rides to town, more trains, and transfers between trains and select bus and trolley routes. It plans early integration of lines to other neighborhoods into its system.

Mayor Dilworth described the new venture as "a most important and efficient step to improve public transportation to preserve Philadelphia from strangulation by automobile traffic. We are on the way toward preserving and expanding service essential to Philadelphia. Residents will enjoy fast, convenient, and inexpensive train transportation for their downtown trips to work or to shop."

President Fisher, of Reading, said: "Formation of a non-profit corporation is an encouraging, forward move in the joint efforts of the city and the railroads to maintain and improve rail commutation service in this area. It has been clear for a long time that the railroads cannot continue to provide this vitally needed service at the staggering deficit they have been suffering."

Long-range corporation aims will be to purchase modern commuter cars, erect additional auto-park-and-ride depots, and attract new riders.

PSICP, an entity apart from either the city government or the railroads, will have a 15-member board of directors. The mayor will appoint eleven members and name the chairman.

Each railroad also will appoint a member, and the Railway Labor Executives Association, representing 23 railway brotherhood unions, two members. All directors will serve without compensation. ◄◄

STOP... ...and think before you use paint again

TRAFFICAIDE® MARKERS

are safer because they show brighter — last longer

Motorists and pedestrians rely on your traffic markers for their very lives. Don't let them down. Use only those markers that can stay fresh and alive —that can outlast weather and wear. TRAFFICAIDE specialized pavement markers meet these vital requirements. Fourway reflective, they flash their warning message around the clock, rain or shine, dark or light.

And TRAFFICAIDE markers suffer little from the elements or the passage of time. Made of a specially compounded vinyl, they are tapered and precoated for lifetime bonding to any pavement. In fact, road tests using both paint and TRAFFICAIDE markings reveal that TRAFFICAIDE outlives paint by more than ten to one.

easy on your budget, too!

Only TRAFFICAIDE's quick-setting mastic is needed for secure bonding to any pavement. Markers dry into place immediately. Traffic flows freely, releasing traffic control personnel for productive work. But the greatest saving of all is the extremely low maintenance cost that keeps your traffic marking system at peak efficiency throughout the years ahead.

TRAFFICAIDE markings include directional arrows; crosswalks; square—rectangular and diamond shapes; lane —berm and no passing lines; parking or car limits; letters, words and numerals.

TRAFFICAIDE CORPORATION
AUBURN, N. Y.

MAIL THIS COUPON TODAY!

Clip this to your letterhead: 2

Gentlemen:

Please send me without obligation your new folder on TRAFFICAIDE Long Life Specialized Pavement Markers with general specifications.

CITY HALL
The Paramount Jou

Paramount, California, uses new General Electric Power Groove Lamps and gets

"4 TIMES BRIGHTER STREETS... 4% LOWER OPERATING COSTS"

says City Manager Dwight L. Hulse

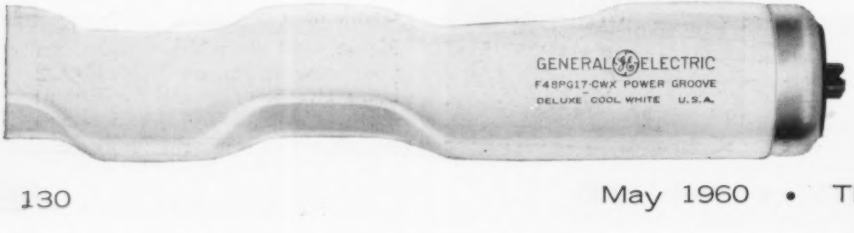
Here's how Mr. Hulse explains it. "Until recently we used a filament lamp street lighting system that was less than ten years old and delivered .4 of a footcandle of light. And while this is more light than you find on many thoroughfares, it became apparent about two years ago that we needed more. So we modernized, our street lighting, using new General Electric Power Groove® Lamps.

"The result? Over 4 times as much light and a 4% lower electric bill! And we've had *no lamp failures in almost a year!*"

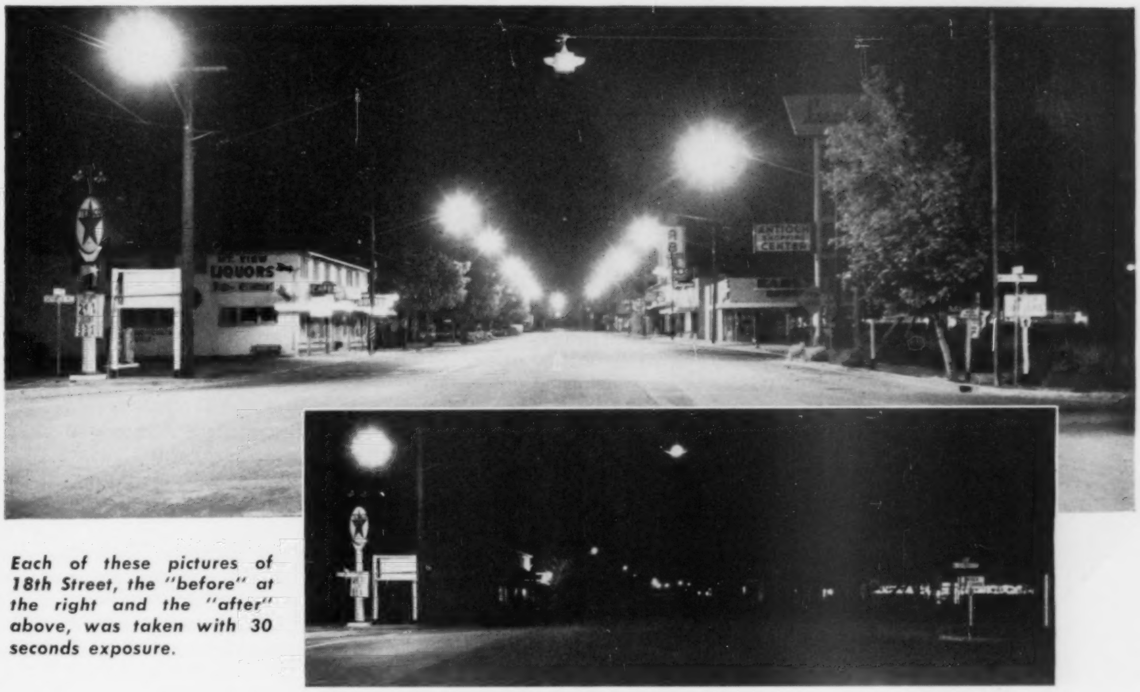
General Electric Power Groove Lamps are ideal for high traffic areas—especially where more than 1 footcandle of light is sought. For one thing, comparing new installations, you have about ⅓ fewer lamps to replace compared to high output lamps—the next most powerful fluorescent type. And they give more light per dollar, bringing the most modern lighting within reach of any community. For more information on how General Electric Power Groove Lamps can cut *your* street lighting costs, write: General Electric Co., Large Lamp Dept. C-019, Nela Park, Cleveland 12, Ohio.

Progress Is Our Most Important Product

GENERAL ELECTRIC



General Electric . . .
where bright ideas
become better lamps



Each of these pictures of 18th Street, the "before" at the right and the "after" above, was taken with 30 seconds exposure.

Now and Then in Antioch, Calif.

A few years ago we asked our local utility, the Pacific Gas and Electric Co., to prepare a master street lighting plan. The idea was to develop street lighting standards that might be followed in the future, and to set up a long-range program to bring the older areas with deficient lighting up to the recommended level. The present level of lighting is as follows:

Minor and secondary residential streets, 2,500-lumen incandescents spaced 150 to 200 feet.

Collector streets, 4,000- to 6,000-lumen incandescents.

Major streets and certain intersections, 10,000-lumen incandescents spaced 100 feet.

Business districts, 20,000-lumen mercury vapor spaced under 100 feet.

The "before" and "after" pictures show the improvement in lighting of 18th St. in the city's business area.

If and when we are able to go to underground wiring, the wood poles will be replaced by metal standards. The use of existing wood poles makes complete uniformity difficult to achieve. The luminaires being used on the wood poles are manufactured by a number of suppliers, including the General Electric Co., the Westinghouse Electric Corp., Line Material Industries, and the Joslyn Co.

A regional shopping center is being developed in the city in which metal poles with double-mast arms will be used. It will also have 20,000-lumen mercury vapor lights.

PHIL MINNER
City Manager
Antioch, Calif.

Merchants Praise 40,000-Lumen Lighting

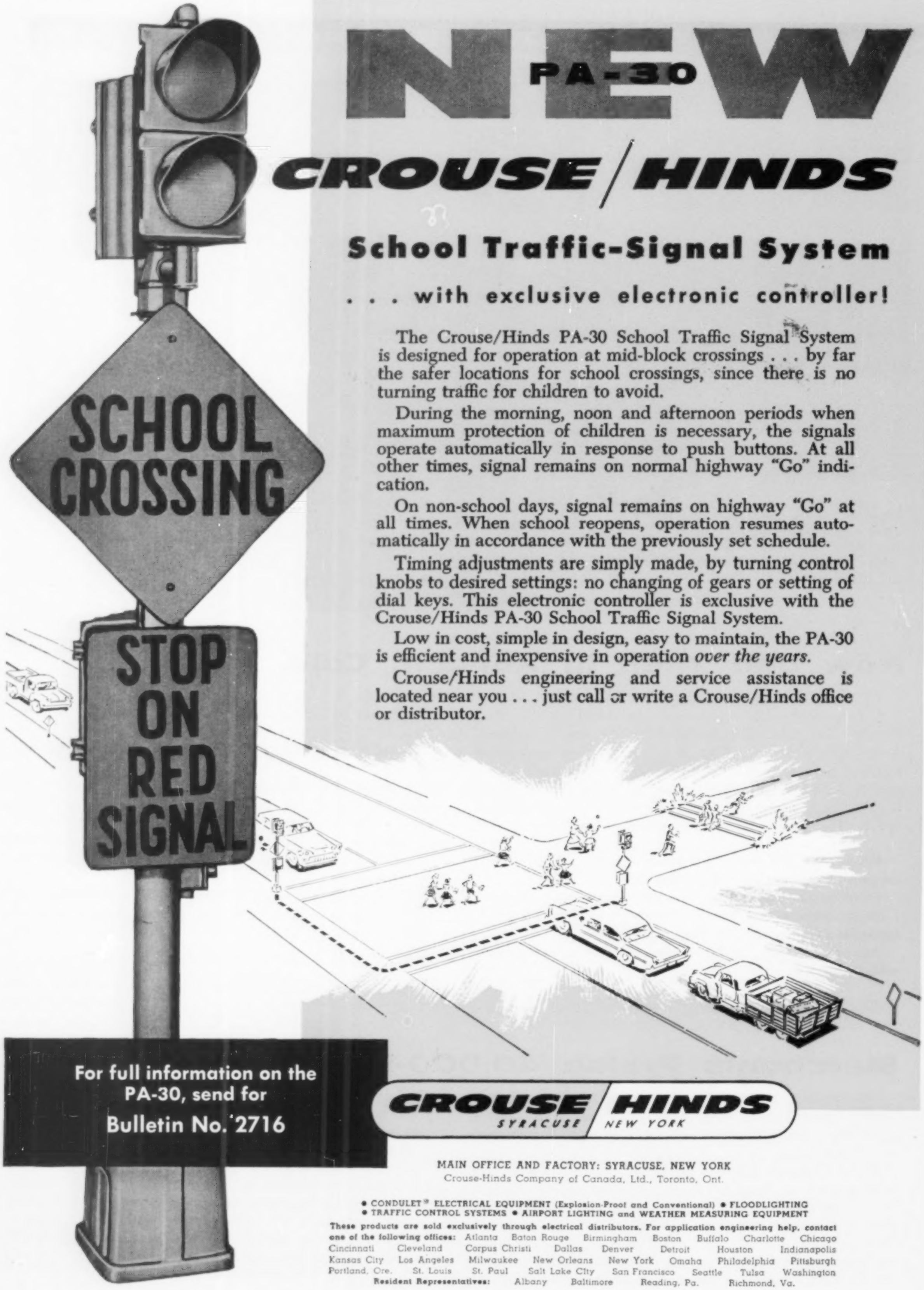
"The lights are bright and the prices are right," says a group of Market Street merchants in Louisville, Ky., capitalizing on an installation of fluorescent street lighting.

Fifty General Electric luminaires were turned on at the start of the Christmas shopping season thanks to a rush program by the Louisville Gas and Electric Co. which had ordered and installed them in less than two months.

"Market Street stores, mostly retail, enjoyed one of the best Christmas seasons in history," said Stuart G. Levy, president of the Market Street Association. "We expect the lights to boost night-time shopping year-round."

On July 10, 1959 Mayor Bruce Hoblitzell proposed fluorescent lighting for several downtown areas on a cost-sharing basis. His offer was that the city would pay for half of the new lighting equipment and installation costs plus the maintenance and power charges to Louisville Gas and Electric. The merchants would pay for half of the initial cost only.

(Continued on page 133)



NEW PA-30 CROUSE/HINDS

School Traffic-Signal System

. . . with exclusive electronic controller!

The Crouse/Hinds PA-30 School Traffic Signal System is designed for operation at mid-block crossings . . . by far the safer locations for school crossings, since there is no turning traffic for children to avoid.

During the morning, noon and afternoon periods when maximum protection of children is necessary, the signals operate automatically in response to push buttons. At all other times, signal remains on normal highway "Go" indication.

On non-school days, signal remains on highway "Go" at all times. When school reopens, operation resumes automatically in accordance with the previously set schedule.

Timing adjustments are simply made, by turning control knobs to desired settings: no changing of gears or setting of dial keys. This electronic controller is exclusive with the Crouse/Hinds PA-30 School Traffic Signal System.

Low in cost, simple in design, easy to maintain, the PA-30 is efficient and inexpensive in operation *over the years.*

Crouse/Hinds engineering and service assistance is located near you . . . just call or write a Crouse/Hinds office or distributor.

For full information on the PA-30, send for Bulletin No. 2716

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Crouse-Hinds Company of Canada, Ltd., Toronto, Ont.

- CONDULET® ELECTRICAL EQUIPMENT (Explosion-Proof and Conventional) • FLOODLIGHTING
- TRAFFIC CONTROL SYSTEMS • AIRPORT LIGHTING and WEATHER MEASURING EQUIPMENT

These products are sold exclusively through electrical distributors. For application engineering help, contact one of the following offices: Atlanta Baton Rouge Birmingham Boston Buffalo Charlotte Chicago Cincinnati Cleveland Corpus Christi Dallas Denver Detroit Houston Indianapolis Kansas City Los Angeles Milwaukee New Orleans New York Omaha Philadelphia Pittsburgh Portland, Ore. St. Louis St. Paul Salt Lake City San Francisco Seattle Tulsa Washington
Resident Representatives: Albany Baltimore Reading, Pa. Richmond, Va.

(Continued from page 131)

The challenge was taken up, Mr. Levy said, and within six weeks Market Street merchants had raised $15,000—assuring the relighting of five blocks from Second to Seventh Street. On September 22 the city matched this figure and the project was under way.

"When the mayor made his offer, Market Street business houses grasped the opportunity to take the first big step in immediate improvement of downtown Louisville," Mr. Levy stated. "We asked each establishment to contribute on a front-foot basis. Only one or two did not cooperate."

In addition to the lighting, the merchants had the poles repainted and set up benches at bus stops.

The six-foot, four-lamp units were mounted on existing poles at a height of 30 feet with a ten-degree uptilt. They are spaced 100 feet apart opposite and give off about three times as much light as the previous small mercury-vapor units. Each fixture supplies about 40,000 lumens. ◄◄

Tall Mercuries Replace Ornamentals in Eugene

Our street lighting program calls for tall, white and graceful mercury vapor units to replace the venerable uprights and five-globe clusters. This photograph of the downtown area of Eugene, Ore., shows the two types of ornamental lights being replaced as well as the new street light standards. Construction started in January and will be completed by June 1, 1960. The municipal utility, the Eugene Water & Electric Board, is installing the lighting system.

The street lighting program places four 20,000-lumen mercury vapor lights at each intersection and three 35,000-lumen between the intersections. Such lights are mounted on aluminum standards 30 feet high. Two hundred and fifty ornamental posts will be removed and replaced with 65 20,000-lumen mercury vapor lights on aluminum posts, two 20,000-lumen mercury vapor lights on wood posts, and forty 35,000-lumen mercury vapor lights mid-block. The luminaires are M-400 power pack and M-1000 power pack, both made by the General Electric Co. The standards are manufactured by Hubbard Aluminum Products Co., Pittsburgh, Pa.

The present cost for the existing ornamental post type light is $737.50 per month; the proposed cost of the mercury vapor installation is $758.30 a month. These charges by the Eugene Water & Electric Board include all costs of installation, amortization, operation, maintenance, energy and other factors for 20 years.

ROBERT A. FINLAYSON, *City Manager*

BOWLING
BILLIARDS

The tall one is the winner in Eugene, Oregon.

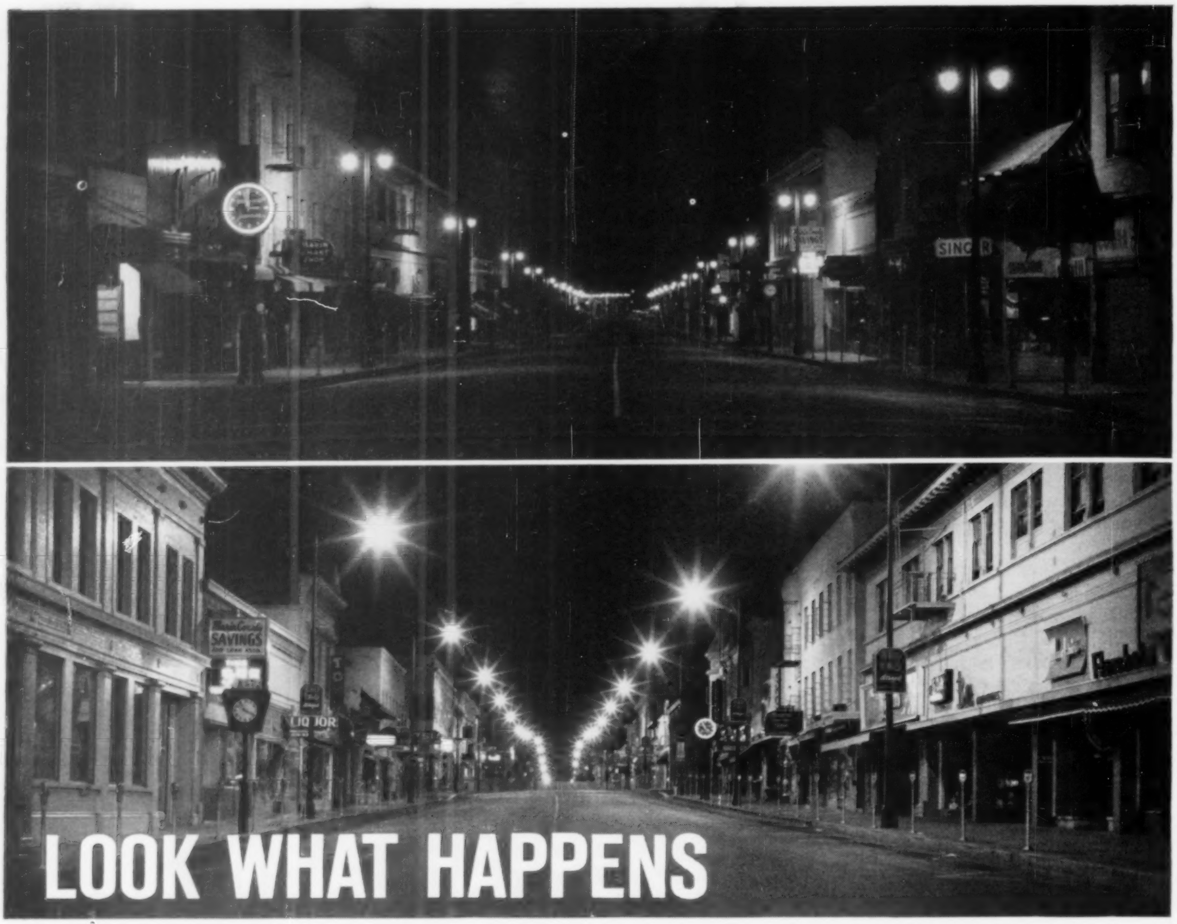
Good in a Business District

An illustration of good lighting is how Louis C. Odry, Line Material Industries, South Milwaukee, Wis., describes the fluorescent installation in Franklin Park, Ill.

The concrete pavement width varies from 40 to 60 feet. The luminaires, with four 72-inch flourescent lamps, are mounted at 30 feet on American Concrete poles. The units are spaced in a staggered arrangement 75 to 80 feet apart.

Illumination varies from 1.1 to 1.5 footcandles. ◄◄

The new fluorescents in Franklin Park, Ill.



when Sylvania Mercury goes to town

Let the city officials of San Rafael, California, tell you:

City Manager, Dan E. Andersen: "Excellent public response."

Retail Merchants Committee Manager, Richard L. Shirley: "These lights have proved, according to the statements of the merchants, that better business can be done during night openings with better illumination."

Chief of Police, Charles J. Chiesa: "The following improvements have been noted: 1. Decreased accidents compared to darkened streets. 2. The light tends to decrease the number of burglaries, prowlers, etc. 3. Women who heretofore were afraid to walk along darkened streets now may take advantage of the improved lighting. 4. Police units find it to their advantage in detecting and recognizing any wrongdoing."

Put ideas in your head?

This reaction is typical. The fact is, Sylvania mercury lamps deliver up to 62 lumens per watt, offer two full years of efficient roadway lighting, assure constant light output *regardless of climate conditions.*

Why not consult *your* electric utility. And write for Sylvania's new, definitive brochure, "Good Roadway Lighting Saves Twice As Much As It Costs."

Address: Sylvania Lighting Products, A Division of Sylvania Electric Products Inc., Dept. 63, Salem, Massachusetts. In Canada: Sylvania Electric (Canada) Ltd., P.O. Box 2190, Station "O," Montreal 9.

Installation by Pacific Gas & Electric Co., San Francisco, Calif.

SYLVANIA

Subsidiary of ***GENERAL TELEPHONE & ELECTRONICS***

Kerrigan's new "Classics" light up the Civic Center's parking lot.

Rockville's Center and Lighted Lots

Rockville, Md., has a Civic Center. It's unique. Purchased from the Montgomery County Historical Society, it consists of 40 acres of landscaped and wooded grounds and an 1812 fieldstone mansion.

The Center is the focal point for the activities of over a hundred civic and cultural groups in this Washington, D. C. suburb, which has mushroomed from 2,250 at the end of World War II to 26,000 in less than 15 years.

Last spring the city started construction of a 150-car parking lot designed by City Engineer John Gray and costing $31,000. A feature of the lot is a series of four Kerrigan "Classic" aluminum poles and arms—first lighting standards of this type in the Washington, D. C. area. They carry Line Material 400-watt mercury-vapor luminaires. The installation has evoked favorable comment from visitors to the Center.

As a result of the Center's success, the City Council has authorized the construction of a Civic Auditorium on the Civic Center grounds. Scheduled for completion by June 1960, it will seat 500 people. The estimated cost of the new structure is $240,000. A second parking lot will be provided, with the same type of lighting.

Walter A. Scheiber
City Manager

The new Classic design by day.

A Long-Range Look at Light

The lighting plan of Madison, Wis., embraces all the arterial thoroughfares of the city. The plan was evolved by studying the existing lighting, preparing a report of needs, arousing the public to demand adequate lighting.

The third point required an active campaign among many small groups before the general public was approached. Later the lighting itself made the strongest argument.

The plan stretches over nine years or more and when it is complete there will be 1,500 luminaires on 35 miles of city streets. The Common Council has approved an appropriation of $25,000 a year from the general tax fund in the city's capital budget to continue the plan to completion.

The first section of the city's mercury vapor lighting was 3.117 miles on East Washington Avenue, completed in 1956. The 281 units are spaced in a staggered arrangement at 115-foot intervals. The street width has two 41-foot pavements separated by a 20-foot median strip. The Line Material Industries luminaires are mounted on eight-foot mast arms from 30-foot steel standards manufactured by the Union Metal Mfg. Co., Canton, Ohio. The lamps are 400 watts, giving 20,000 lumens or 1.0 average footcandle. The street averages 25,000 motorists daily.

The old luminaires, owned and serviced by the Madison Gas & Electric Co. were 6,000-lumen, pendant incandescent lamps attached to 23-foot mast arms or suspended over the street center line by span wires.

The success of this first mercury-vapor installation

(Continued on page 136)

(Continued from page 135)

induced merchants around the Capitol Square to propose a light-up program for the central business district. It was plain that a brightly lighted business area invited suburbanites to come downtown. These Capitol Square merchants could not help but see the contrast at the meeting of the new East Washington Avenue lighting system and the old central business district ornamental lighting system.

It was the aim of the merchants to have 28 mercury vapor lights installed and burning on the Square when the city began its week-long observance of Madison's hundredth year as a city. The 32 conventional, ornamental standards were removed and 28 mercury vapor street lights were installed on 30-foot steel poles on the outside curb of the Capitol Square by centennial week. A 120-volt festoon circuit is brought to a weatherproof outlet at a height of 15 feet on each pole making Christmas decorations easy to connect.

The remainder of the central business district, consisting mainly of the two-block-long spokes radiating from the Square in sixteen directions and the streets forming the outer ring of the Square, was lighted in 1958 at a cost of $61,000. The 133 light standards and equipment were purchased by the City of Madison and installed by the contractor who submitted the lowest bid. Madison's entire mercury vapor street lighting system will consist of city-purchased equipment maintained and serviced by the city traffic engineering electrical crew. Electric power is supplied by the Madison Gas and Electric Co. on a metered basis at a slightly higher cost per unit than for the incandescent fixtures but the new system gives 2.5 times more pavement illumination.

Strictly Residential

In the residential areas a vastly increased number of scattered installations are made each year as the suburban areas develop. According to a recently adopted ordinance the traffic engineer has the authority to order these installations as funds for power costs are available in the budget approved by the Common Council. The present requirement in residential areas in Madison is one 6,000-lumen street light at every intersection or at intervals of approximately 400 feet. The 1960 budget provides for the expenditure of $113,000 for power for the city's residential and arterial lighting systems.

Ivan A. Nestingen
Mayor

Rumford's Five-Year Plan

During 1956 the town of Rumford, Me., started a street lighting program which will be completed in 1961. In the first year twenty-eight 20,000-lumen fluorescent lights were installed; seventeen 6,000-lumen incandescents and one mercury vapor light. All are of General Electric make.

The following year, 1957, there was added to the program increased lighting intensity for residential areas, particularly increased lighting at all street intersections. It was also planned to change old concrete light standards on most of our in-town bridges to Union Metal standards with new types of luminaires to provide increased lighting.

The program included installation of 20,000-lumen fluorescent lamps, 11,000-lumen mercury vapor lamps, 6,000-lumen incandescent lamps, a step up from 600-lumen incandescent lamps to 1,000-lumen incandescent lamps in all residential areas—this to include a change from 1,000-lumen incandescents to 2,500-lumen incandescents at all street intersections.

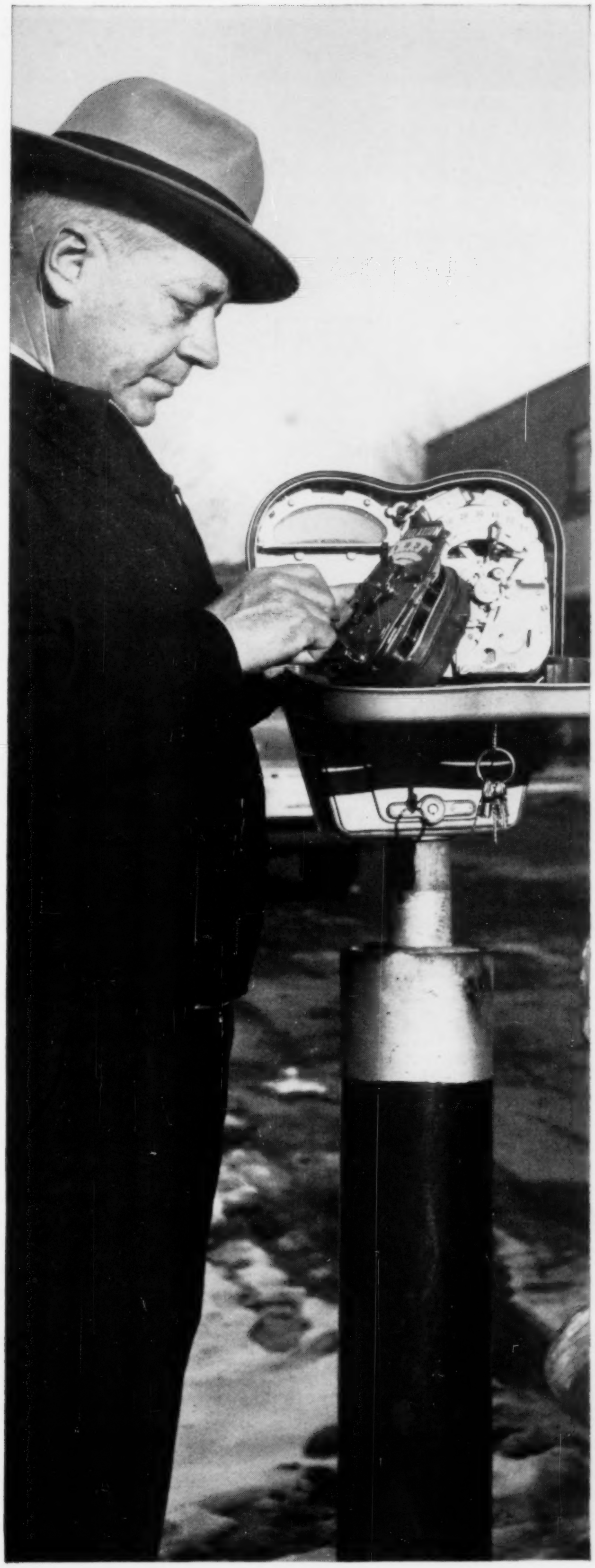
Also installed in our street light system were new Fisher-Pierce photo-electric cells which removed the guesswork of on and off and provide maximum economical utilization of our street lights.

All of these changes were made through and with the cooperation of the Rumford Light Co., the State Highway Commission and the Central Maine Power Co.

In most instances, the cost of this program was paid by the companies providing electrical energy. The town paid only the increased cost of energy used. At the outset of the program, the system was metered and power cost paid for accordingly; however, after acquisition of our local distribution system by the Central Maine Power Co., all installations are now paid for on an annual flat rate. The rate for each lamp depends on size of luminaires, type of pole, length of arms, etc. These rates are established by the Central Maine Power Co., and approved by the State of Maine Public Utilities Commission.

Leo J. Morency
Town Manager

The main business street of Rumford, Me., showing the 20,000-lumen fluorescent luminaries mounted on Union Metal standards.



YOUR INITIAL SAVINGS ARE

23%

WITH DUBL-DUALS

You save 23% on the initial cost of Rockwell Dubl-Dual parking meters, because two mechanisms are combined in one case. For on-street or off-street parking, Dubl-Duals not only assure initial savings, but installation costs are slashed 50% as well. With only half as many meter stands, both maintenance and collection costs are cut. You can meet any spacing requirement by specifying Dubl-Duals with a few single Duals.

Dual, world's original maker of parking meters, can give you expert advice on street-marking to accommodate *more* cars . . . on-street or off-street. Rockwell offers the only *complete* line of automatic and manual parking meters to meet any need. For information, write: Dual Parking Meter Company, Subsidiary of Rockwell Manufacturing Company, Pittsburgh 8, Pa.

AUTOMATIC

DUBL-DUAL

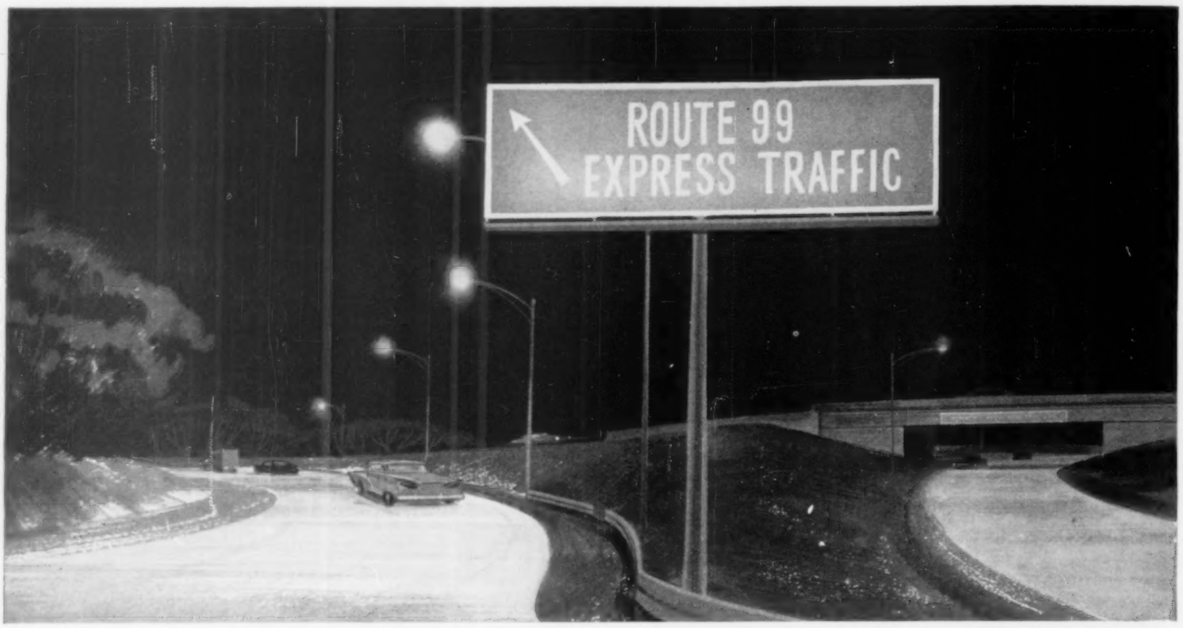
MANUAL

The only complete line of automatic and manual parking meters

DUAL PARKING METERS

another fine product by

ROCKWELL



The Fluoresign is an outdoor fluorescent luminaire that provides high-visibility illumination for signs, panels, walls, posters and highway markers. It is modular to fit any size sign. It is simple to install and maintain. Models available for all fluorescent lamp types.

Revere Fluoresign gives high-level controlled light for highway signs

High-speed driving on modern highways makes efficient lighting of highway signs a must for safety and driving convenience. Revere's Fluoresign provides the high level of glare-free light needed. The Fluoresign distributes light evenly over the entire sign area, eliminating hot spots and glare. It attracts attention to the sign and allows fast, accurate reading.

Specify Revere Fluoresigns for every location where safe, smooth traffic flow depends on instant attention to traffic control signs. Fluoresigns provide the essential high visibility for fast, easy reading of signs in these key locations.

Assembles to any length The Fluoresign can be fitted to any size highway sign by joining combinations of standard 4, 6, or 8-foot reflectors with standard socket assemblies. The reflectors join to form a continuous, unbroken line that blends attractively with the sign.

Easier adjustment Fluoresign reflector and lamp assemblies rotate as a unit in relation to the mounting arm. This permits accurate placement of light even while lamps are burning. Degree marks on socket assemblies allow easy adjustment of the unit to the desired angle for best lighting.

Easier maintenance A new Butyrate one-piece snap-on cover and the all-compressible sockets make relamping and maintenance easy. The cover shields the lamp from cold weather, helps maintain light output when temperature drops. It won't break, shatter or discolor. Its snug fit lets you mount the Fluoresign with the light directed upward.

Write for Fluoresign Bulletin 300-21 for full information

Revere
ELECTRIC MFG. CO.®

OUTDOOR LIGHTING

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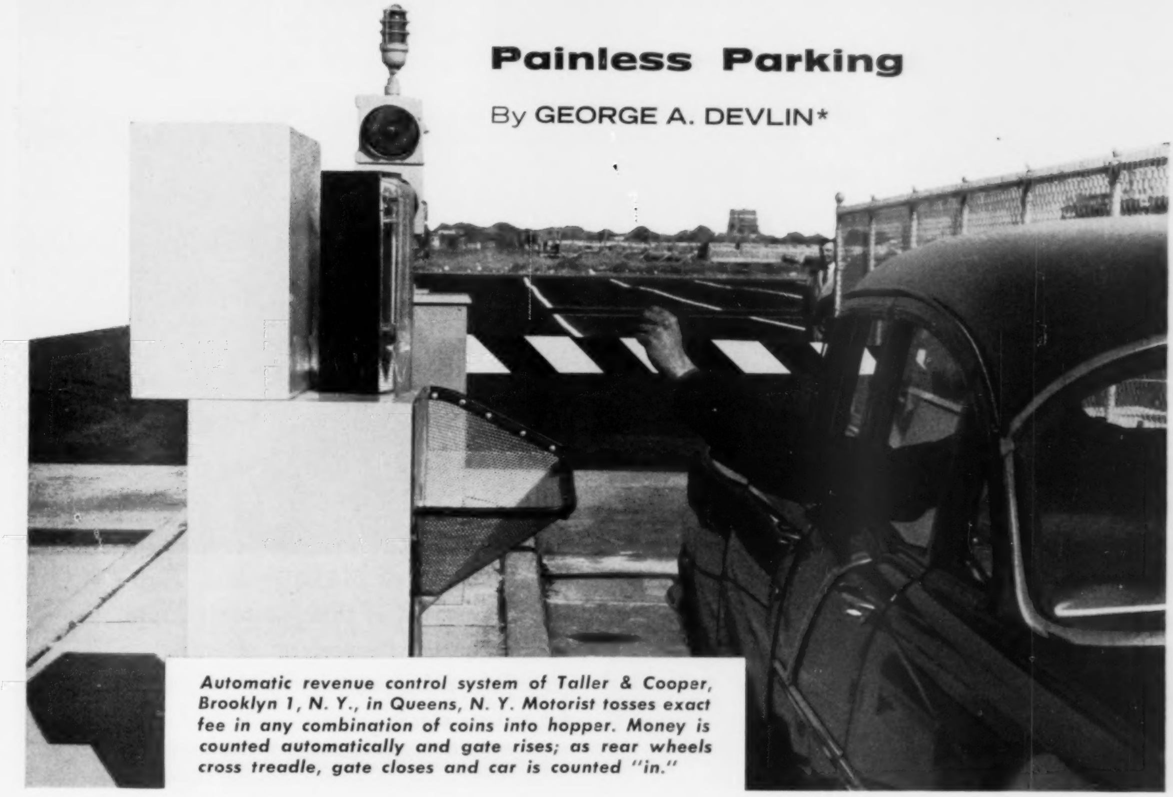
Painless Parking

By GEORGE A. DEVLIN*



Automatic revenue control system of Taller & Cooper, Brooklyn 1, N. Y., in Queens, N. Y. Motorist tosses exact fee in any combination of coins into hopper. Money is counted automatically and gate rises; as rear wheels cross treadle, gate closes and car is counted "in."

Increasing wage rates have caused widespread adoption of customer self-parking on both municipal and private facilities. Recently a number of mechanical and electronic devices have been developed which are aimed at further reduction in manpower and greater efficiency in revenue and traffic control.

No discussion of this subject would be complete without mention of the parking meter—first and still the most common device used in the control of parking. Meters are used extensively by most municipalities to regulate on-street as well as many municipally owned off-street parking facilities. Since the effectiveness of the parking meter is dependent on the unique privilege of a municipality to impose, through its police powers, a summary penalty for violation of the parking ordinance, it has not found any application in the operation of privately owned parking facilities.

Electric Gate Control

This device is a gate arm, similar to a railroad crossing barrier, installed on a single driveway serving both the "in" and "out" traffic of a small lot or garage. The arm normally is in the closed position. In front of this arm on the driver's side is a coin box similar to that used in vending machines.

To enter the parking facility, the driver deposits the required coins into the box, which, in turn, causes the arm to be raised, allowing the car to enter. A treadle in the driveway beyond the gate is actuated by the car as it clears the driveway, causing the arm to return to the normally closed position. When a car leaves, the crossing of the inside treadle causes the gate to open and a second treadle on the street side closes the gate after the car has cleared.

Where it is desired to limit the use of the facility to specific customers, actuation of the gate upon en-

(Continued on page 141)

This metered lot in Indianapolis, Ind., is equipped with barriers by Harris-Barrier, Inc., Indianapolis.

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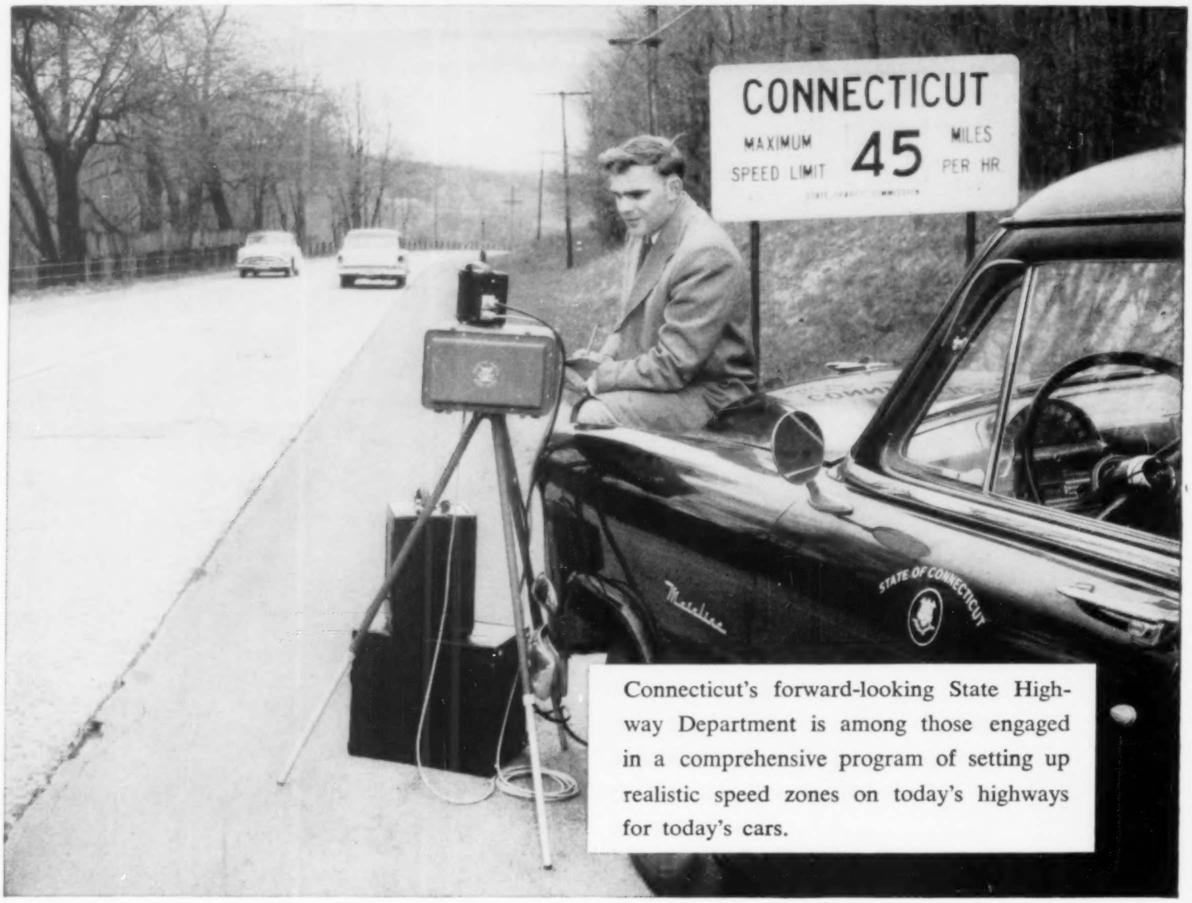
* Since 1937, Mr. Devlin has been Vice President in charge of the consulting and planning division of National Garages, Inc., of Detroit, Mich. National Garages has been a pioneer in design, financing, and operation of self-service parking lots and garages. His article here is based on one appearing in *Traffic Quarterly* of the Eno Foundation for Highway Traffic Control.



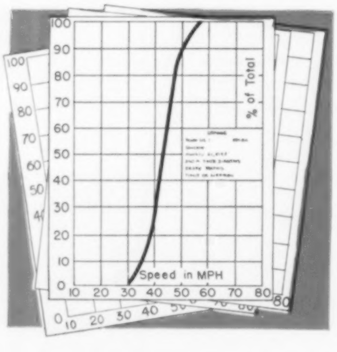
Connecticut's forward-looking State Highway Department is among those engaged in a comprehensive program of setting up realistic speed zones on today's highways for today's cars.

ELECTRO-MATIC® RADAR
assures realistic speed limits . . .

The first essential in the process of setting zone speeds is the determination of current speed patterns. The Electro-Matic Radar Speed Meter is now the accepted means by which traffic engineers obtain speed characteristics of vehicle flow on all types of highways.

Highly accurate under all conditions of traffic and weather, it is inconspicuous and operates without contact-making devices on the road surface. The Meter is easily portable and requires only one man for operation. It can be set up in less than three minutes. Operation is on 6 Volt or 12 Volt battery or 120 Volt A.C.

A Graphic Recorder provides a permanent record for study and analysis leading to the preparation of speed distribution curves and other data essential to instituting a realistic system of speed zoning that goes hand in hand with modern enforcement techniques.



For more information on the Radar Speed Meter, request Bulletin R-112

MODEL S-2

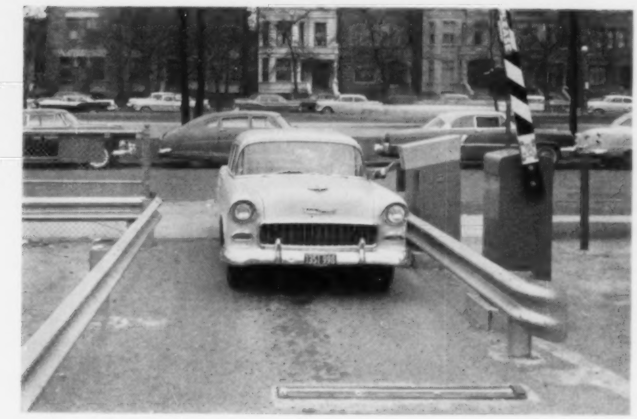
ELECTRO-MATIC® RADAR SPEED METER

Accurate Readings of Vehicle Speeds.
Direct Indications in Miles Per Hour.
Light Weight — 3 Minutes Set-up Time.
Compact Vibration-proof Construction.
Permanent Records Optional.

50
40
30
20
10

TRAFFIC ACTUATED®

AUTOMATIC SIGNAL DIVISION
EASTERN INDUSTRIES, INC., NORWALK, CONN.



As the car's front wheels cross the opening treadle, in the Parkontrol system used at South Parking, Chicago, Ill., a ticket, dated for year, month, day, hour and minute, is ejected from the machine. When the parking check is removed from the mouth of the machine, the gate rises to a vertical position and remains open until both front and rear wheels have crossed the closing treadle, located beyond the gate. The Parkontrol system is made by the Globe Ticket Co., 112 North 12th St., Philadelphia 7, Pa.

TICKET HERE
TAKE TICKET

CYPAK static control parks cars at New York's International Airport. As this stewardess from the American Airlines approaches the gate, a magnetic coil beneath the road causes the ticket dispenser to stamp the date and time on a ticket which she takes. Then the Westinghouse system permits the car to enter by raising the parking lot gate which closes when the car passes over a second magnetic coil. The manufacturer is the Westinghouse Electric Corp., 3 Gateway Center, Pittsburgh 20, Pa.

(Continued from page 139)

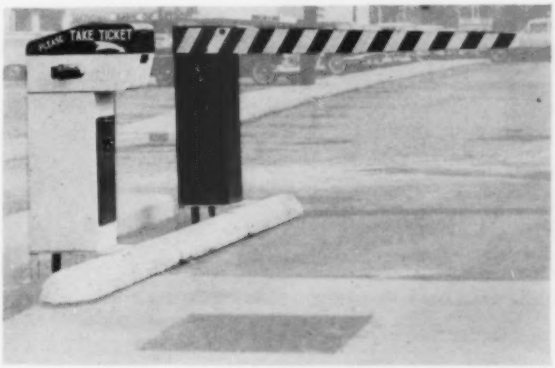
tering is accomplished by insertion into the control box of a key, magnetically imprinted card, or token, which is issued only to authorized users. Facilities controlled by a gate require no attendant.

Another method is a receipt-issuing machine placed at the entrance of a parking facility. It issues upon payment of a specified fee a serially numbered receipt to an incoming customer. The customer places this receipt on the inside of the windshield, where it can be seen from the outside, thus providing the operator with a means of checking the facility periodically to see that all cars parked thereon have paid.

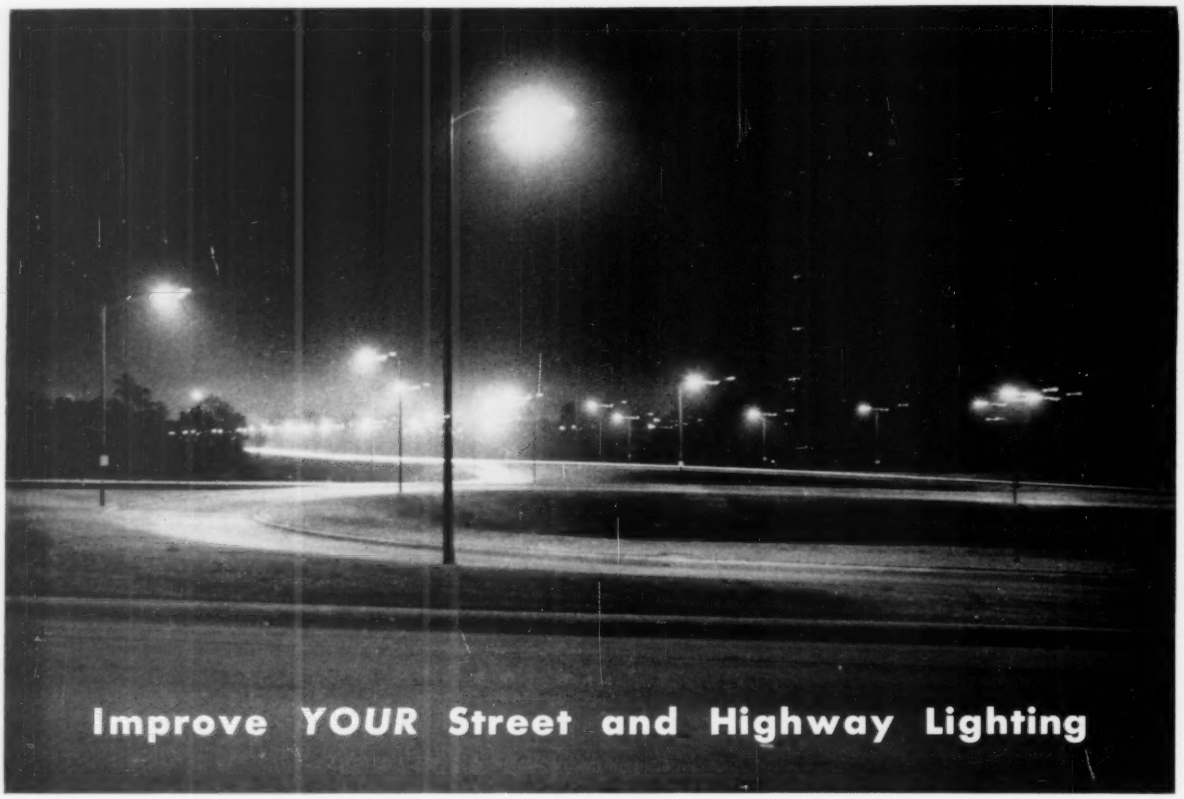
Also available is an automatic ticket-issuing machine consisting of a cabinet for the storage of a continuous strip of parking tickets, a feed mechanism, a timeclock, a cut-off shear, and an actuating treadle in the driveway. The machine issues a time-stamped, dated, and serially numbered ticket to the driver of each incoming vehicle, and therefore performs the same function as that of a doorman. On leaving, the customer presents the ticket to the cashier for computation and payment of the parking fee.

The method has found its principal application in high-volume self-service parking facilities having graduated parking fees, such as those associated with downtown department stores, retail centers, and airports. Since in most installations the actuating treadle is placed about a car length in front of the ticket machine, the ticket is already cut off and presented through an opening in the machine to the customer by the time he gets opposite the machine and he need

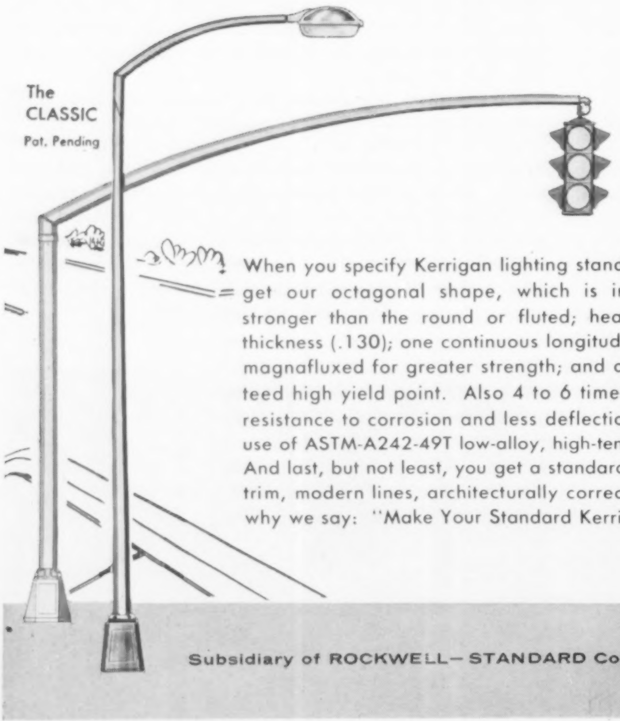
(Continued on page 143)



On this Grosse Pointe, Mich., municipal lot, an automatic gate is used with the ticket spitter of Automatic Parking Devices, Inc., Detroit 13. When the customer pulls his ticket from the machine the gate rises to allow entry to the parking area. As the car leaves the entrance drive, the gate closes to require the next customer to take his ticket.



MAKE YOUR *STANDARD* KERRIGAN



When you specify Kerrigan lighting standards you get our octagonal shape, which is inherently stronger than the round or fluted; heavier wall thickness (.130); one continuous longitudinal weld magnafluxed for greater strength; and a guaranteed high yield point. Also 4 to 6 times greater resistance to corrosion and less deflection by our use of ASTM-A242-49T low-alloy, high-tensile steel. And last, but not least, you get a standard that has trim, modern lines, architecturally correct. That's why we say: "Make Your Standard Kerrigan!"

Our new 70-page catalog has the engineering facts on both steel and aluminum standards! Won't you write for your FREE copy now? Address: Dep't. A-5

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KERRIGAN
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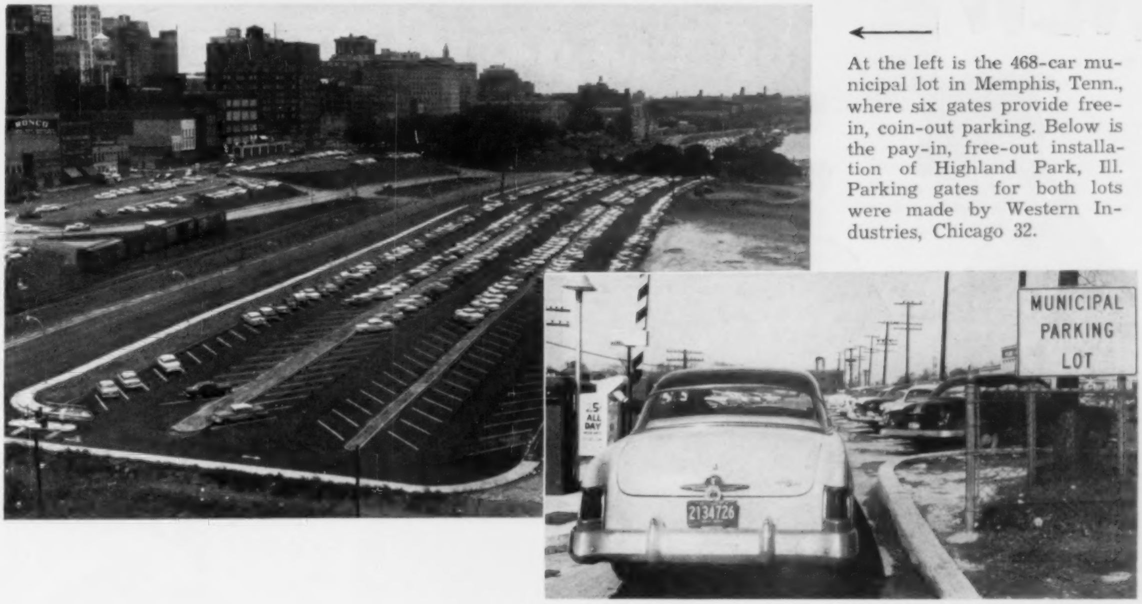
Nashville, Tennessee

Subsidiary of ROCKWELL—STANDARD Corporation

ROCKWELL R STANDARD ®



←

At the left is the 468-car municipal lot in Memphis, Tenn., where six gates provide free-in, coin-out parking. Below is the pay-in, free-out installation of Highland Park, Ill. Parking gates for both lots were made by Western Industries, Chicago 32.

(Continued from page 141)

merely take a ticket without having to stop the car.

A single entering drive can accept up to 15 cars a minute, twice as many as with manual time-stamping.

To insure that the customer takes the ticket, the ticket-issuing machine can be combined with an electrically operated gate barrier. When the customer takes the ticket from the machine, the gate arm is raised. Also, where the entrance is not under continuous supervision by personnel, the addition of a gate is frequently necessary to prevent cars from leaving by the entrance drive.

There is also a differential counter. It adds and subtracts the number of cars in a facility and displays a continuous inventory.

The differential counter is finding widespread application, particularly in self-service parking facilities. In those facilities using automatic ticket-issuing equipment, the incoming pulse for the differential counter is usually taken directly from the ticket machine. The subtracting pulse may be taken from the cashier's check-out clock instead of from a sensing device in the exit drive. Differential counters are almost mandatory in coin- and gate-controlled facilities to prevent cars from entering when the parking area is filled to capacity.

Most automatic parking devices depend for operation on a sensing unit activated by the automobile.

The most inexpensive is the rubber-tube treadle, surface-mounted across the driveway, which closes an electric circuit when the wheel of an automobile passes over it. The principal disadvantage of the hose treadle is that it can be actuated by a person stepping on it. It is, therefore, susceptible to many false actuations when installed in driveways that are also used by pedestrians.

Automatic fee computation requires that the ticket issued be coded as to the time and date of arrival by punched holes, magnetic ink, or otherwise. When the customer leaves, this ticket is inserted into a computer, which would first compare the time and date of arrival with that of checking out, derive the elapsed time, and then compute from this information the proper fee to be charged, based on the regular schedule of parking fees. The total fee to be collected is displayed to the cashier as well as to the customer, and is also imprinted on the ticket. ◄◄

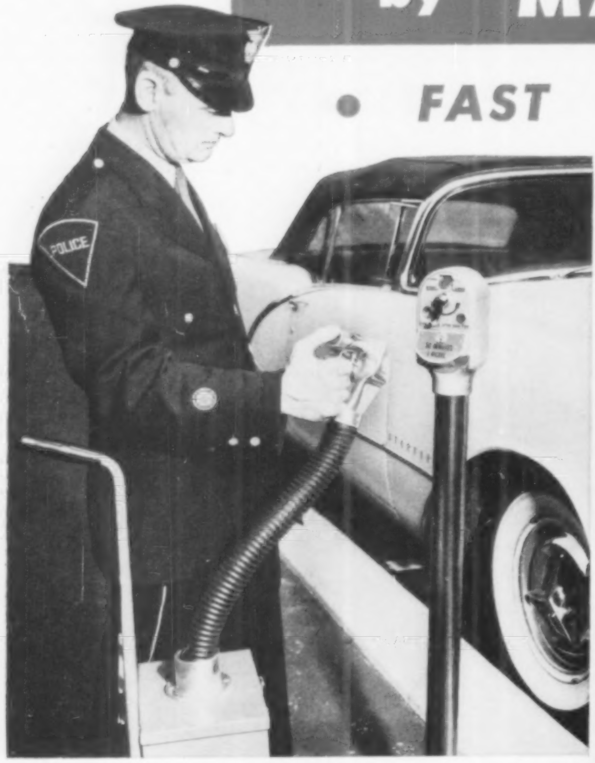
RANCE
TION PLAN
PARK
TAKE TICKET
S YOU ENTER
KEEP
RIGHT

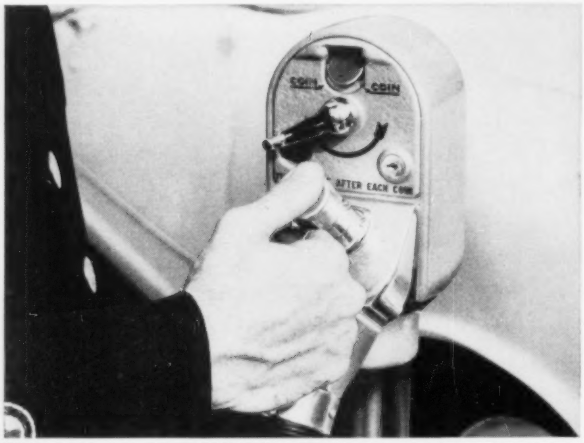
→

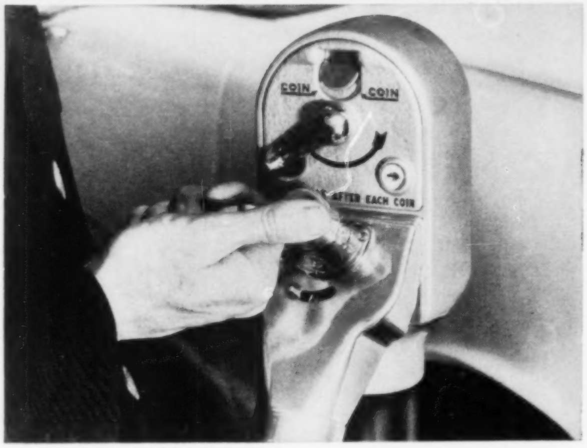
On this Evanston, Ill., lot, parking is controlled by the Parcoa automatic system. Tickets issued on this lot are validated by the merchants. The system is made by the Johnson Fare Box Co., 4619-25 Ravenswood Ave., Chicago 40.

NEW 2-SECOND COLLECTION SYSTEM by "MARK-TIME"

• FAST • SAFE • EASY





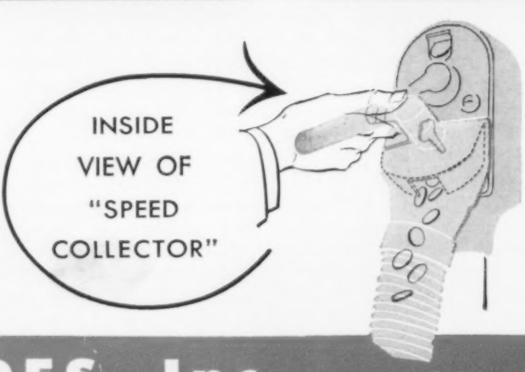


Step #1 Locked metal vault on cart is easily rolled from post to post by officer.

Step #2 Handy "Speed Collector" with super flexible extra wide diameter hose plugs into meter. Then push plunger.

Step #3 Turn handle—money falls safely into vault. Passage of coins is unexposed and 100% secure from meter to sealed collection vault. As "Speed Collector" is removed, coin receptacle is automatically resealed.

This is the fastest, safest, easiest method of collecting from parking meters ever designed. The system is adaptable for use with present "Mark-Time" meters. Complete details and demonstration available on request.

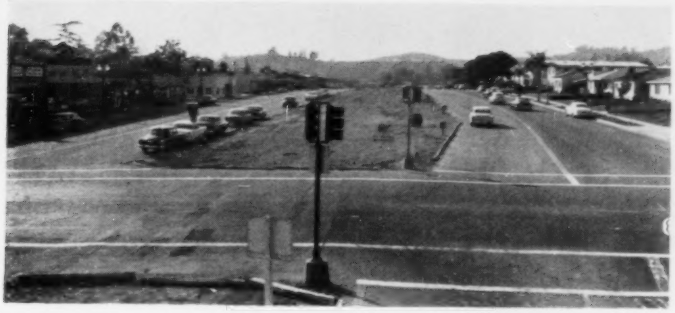


Write for new free book, "Better Parking Means Better Business."

Write for Stereo demonstration with viewer and set of stereo color photos of 2-second collection system in action. See for yourself!

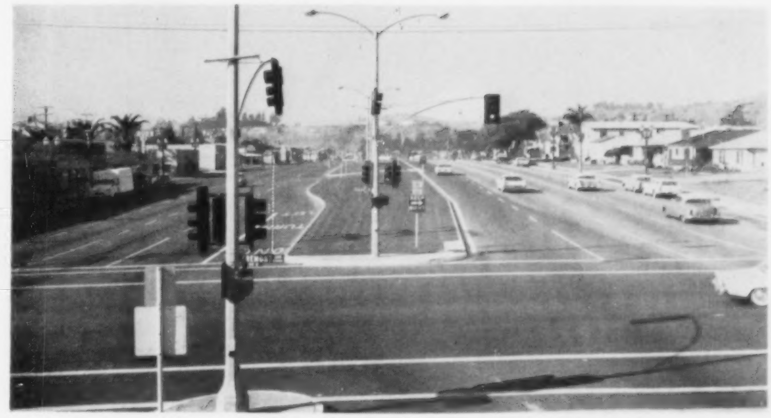
MARK-TIME

M. H. RHODES, Inc.
HARTFORD, CONNECTICUT



When the street car tracks were removed from Main Street in 1946, the median strip presented the City of Alhambra, Calif., with a problem and a challenge. At the left is the problem and below the solution.

Making The Most Of a Median Strip



Here in Alhambra, Calif., we have developed a plan for widening the roadways on each side of the median strip that remained after street cars were abandoned some years ago and for installing landscaped islands. Left-turn lanes were provided at important intersections. Traffic signalization and modern, high intensity level street illumination, using mercury-vapor lamps, were installed.

All went well until it was discovered that deeds to the property contained reversionary clauses if railway operations were abandoned. This posed a legal problem, not only for Alhambra, but also for several neighboring cities in San Gabriel Valley that were traversed by such rights of way.

Then the County of Los Angeles entered the negotiations on a countywide basis, acting for the cities concerned, and resolved the problem by condemning the rights of way so that the individual cities, including Alhambra, could proceed with their improvement plans.

Alhambra's first improvement contract was let to W. E. Hall Co. and covered Main Street from Raymond Avenue to Fremont Avenue, 2,505 feet. This phase was completed at a cost of $30,970. Street lights and traffic signals were installed and relocated by the city for an additional $10,116, following which the center strip was landscaped.

A second contract was awarded to the Osborn Co. for 1,280 feet of Main Street from Fremont Avenue to Hampden Terrace and was completed at a cost of $44,586, with the street lights and traffic signal relocation and installation work completed by the city at a cost of $9,332. Landscaping was completed in January 1960.

ALLEN B. STEPHENSON, *City Manager*
and ROBERT G. BEZZANT, *City Engineer*

Lets Have Smaller Cars — and Why

An Old Testament prophet over 2500 years ago predicted: *"The chariots shall rage in the streets, they shall jostle one against another in the broad ways: they shall seem like torches, they shall run like the lightnings."*—Nahum 2: 4.

The modern "chariots" come from Detroit; public demand is blamed for their obesity and good times for their popularity. Each year more than 4,320,000 cubic feet of American earth are excavated to make graves for what the news media call "our traffic victims," yet almost everyone drives or owns a car and almost everyone else imagines he should.

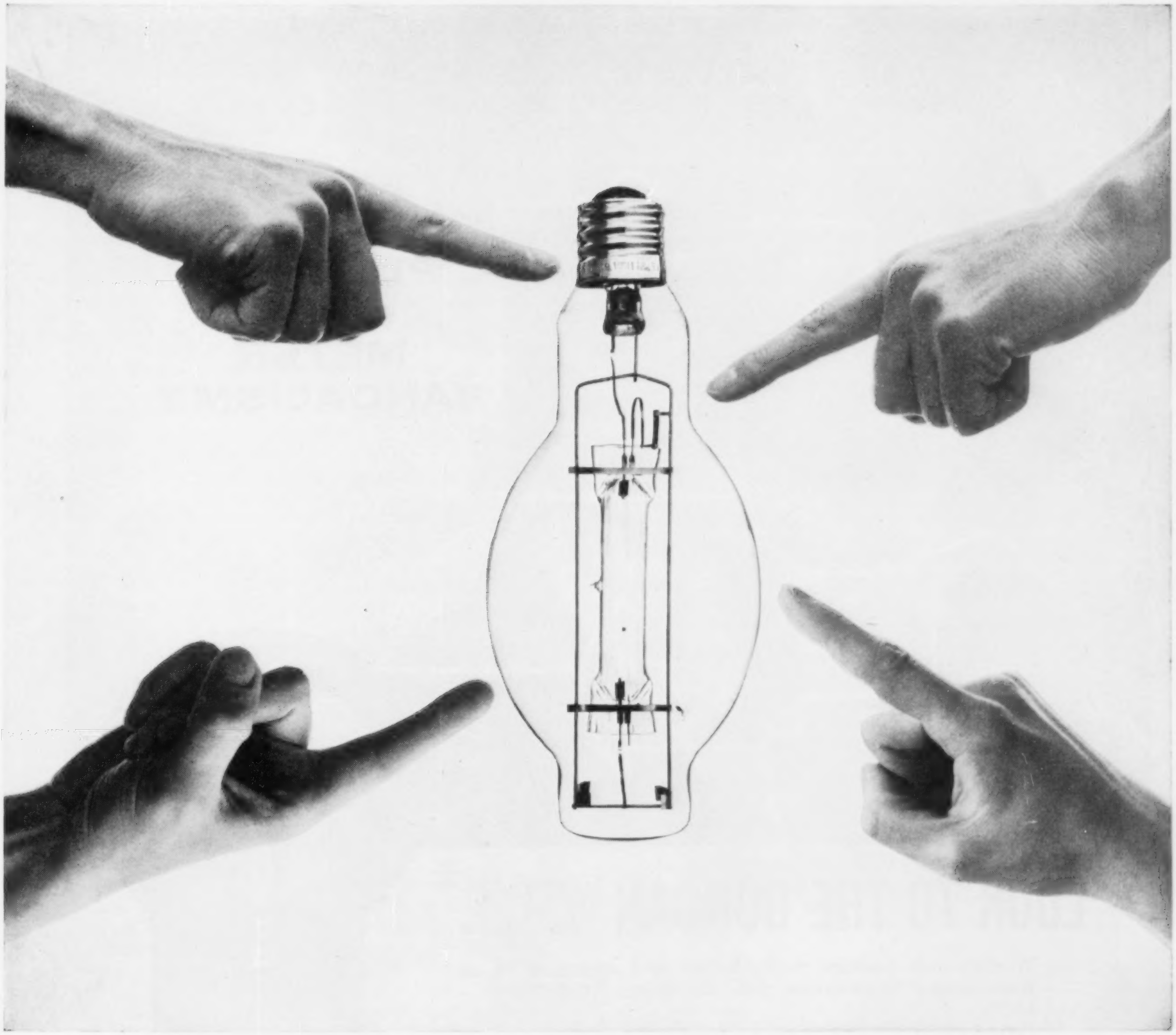
Metropolitan Los Angeles has the greatest concentration of motor vehicles of any urban area in the world. Why then do we let makers continue to foul up our street and parking designs by their failing to adopt and adhere to dimensional limitations and uniformity? It is far past time for the tail to quit wagging the dog. Many streets, parking lots, and

(Continued on page 149)

Mercury lamps may look alike

These Mercury lamps look alike and cost about the same, but one—the Westinghouse Lamp—will deliver more light initially and maintain this high light output longer. It is your most economical choice for industrial and commercial lighting and incorporates all 4 outstanding improvements listed below.

1. Lifeguard™ arc tube to improve lumen maintenance. Even after 10,000 hours of use, these lamps will still give 85% of their initial light output. *This means that 2½ years after you install Westinghouse Mercury Lamps, your plant or streets will have almost the same high level of light as when the lamps were new!*



. . . but four differences make one a better buy!

2. New design electrodes lock in the emission material and insure long life and easier starting.

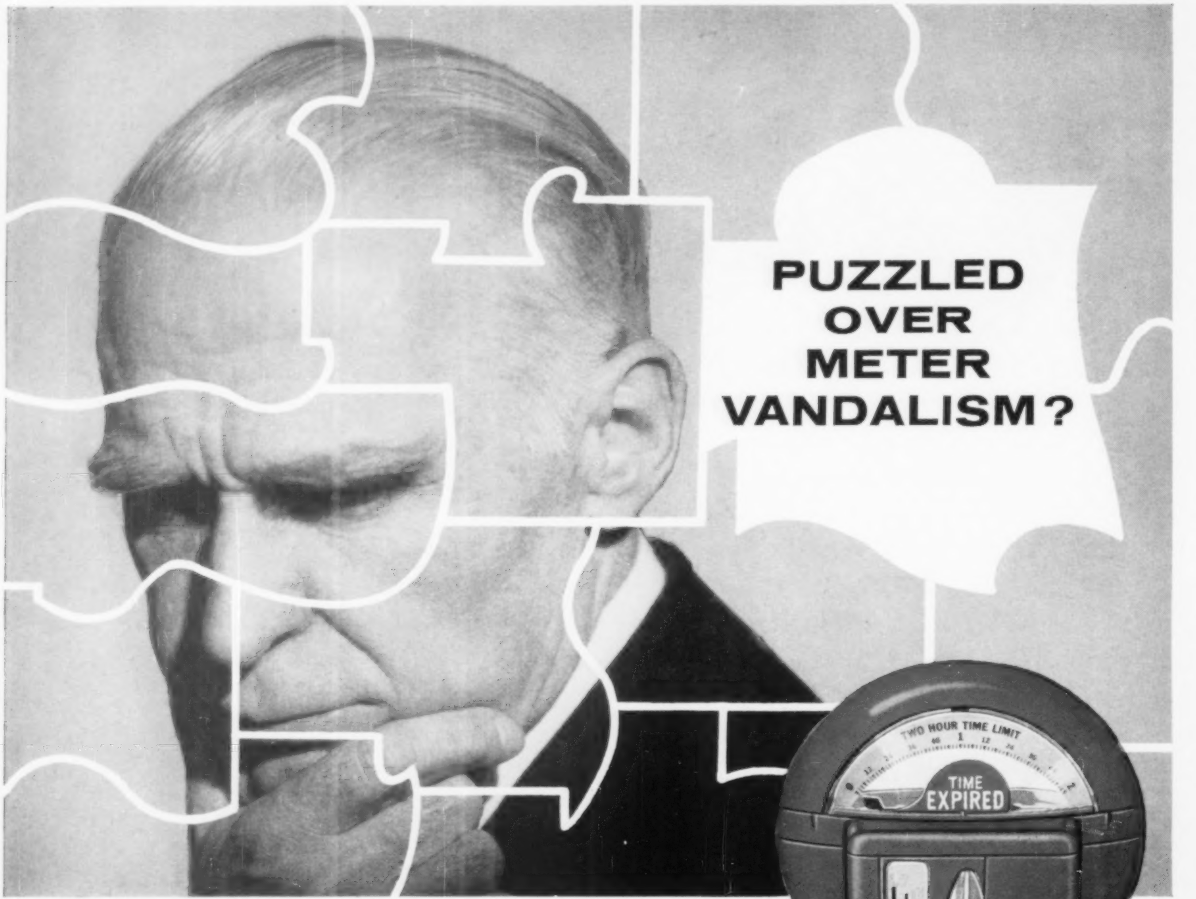
3. Weather Duty™ construction. Special glass is resistant to thermal shock and corrosive fumes. Moisture, industrial fumes, even snow and rain can't harm these Westinghouse Mercury Lamps.

4. Hi-temp silicone cement holds bases tight for life . . . actually gets stronger as the lamps burn. No drop-outs. Westinghouse even date-codes its mercury lamps so you can check performance.

No matter what type or wattage of mercury lamps you use, you will get more value and light for your money—plus longer, trouble-free service—by specifying and insisting on Westinghouse Mercury Lamps. Westinghouse makes the most complete line of mercury lamps in the industry . . . 100 to 3000 watt sizes . . . in clear, color-corrected and reflector types. Contact your authorized Westinghouse lamp agent or nearest Westinghouse sales office.

YOU CAN BE SURE...IF IT'S Westinghouse

WESTINGHOUSE LAMP DIVISION, Westinghouse Electric Corporation, Bloomfield, N. J.


PUZZLED
OVER
METER
VANDALISM?

TWO HOUR TIME LIMIT
TIME
EXPIRED
INSERT COIN. TURN HANDLE TO RIGHT AS FAR AS POSSIBLE AFTER EACH COIN
A DUNCAN METER
Underwriters Laboratories, Inc.

LOOK TO THE DUNCAN V.I.P.*

World's only parking meter tested and approved by Underwriters' Laboratories, Inc., Burglary Protection Dept.

City budgets cannot afford continued losses due to expensive vandalism and theft of meter revenues. Exhaustive tests prove Duncan "V.I.P." is the answer to this serious ever-increasing problem.

Purposely created to combat the costly destruction of vandalism, the Duncan "V.I.P." represents the highest degree of security ever found in a parking meter.

A free trial, with no obligation, will convince you—write today.

***Vault Insured Protection against vandalism**

Check these outstanding protection features:

- TAMPER-PROOF BOLTED DOOR
- BURGLAR-RESISTIVE HOUSING
- PATENTED SEALED COIN BOX

V. I. P. EXCLUSIVE

Submerged mystic-lock increases security to the coin compartment. Non-exposure virtually eliminates malicious lock area vandalism.*

*Trade Mark

DUNCAN PARKING METER
Division of Motor Products Corporation
835 No. WOOD STREET • CHICAGO 22, ILLINOIS

(Continued from page 145)

garages are obsolete or grossly inadequate because of the whims of automobile manufacturers.

We already have paved traffic surfaces across the United States exceeding the entire area of all New England, totalling over 40,000 square miles. If the course of the past fifty-eight years continues unchecked, one may calculate precisely at what pregnant moment all of penetrable America could become one huge, smooth traffic and parking surface dotted only by clusters of factories, dwellings, and offices.

In the last twenty years there has been an overall average increase of around 25% in the individual and collective space occupied by the latest model automobiles. Translated into specific terms this means that five cars we were able to park in 1939 have been reduced to four in 1959. This has thus cut the availability of existing travel and terminal facilities by approximately 20%.

Present Dimensions

The smallest 1959 American made passenger automobile has a wheel-base of one inch over seven feet and the largest has a wheel-base of one inch under 11 feet. The smallest is just a fraction of an inch under 12½ feet long and the largest is within a fraction of an inch of 19 feet over all. The smallest car is 1½ inches over 5 feet wide and the largest is within four inches of being seven feet wide. The greatest front overhang is two inches over three feet and the longest rear overhang is four inches more than five feet. The least front overhang is over two feet and the least rear overhang is three feet. Thus, the largest five-passenger car is over 50% larger than the smallest one. Why this wide range of sizes for the same theoretical capacity?

In 1930 a Los Angeles zoning ordinance was adopted which provided that a garage with one parking stall for each apartment must be constructed on the same premises with an apartment house of 20 units or more in certain areas of the city. Within eight months, public pressure changed the ordinance to require only three parking spaces for each four apartments. By 1935 the parking situation was aggravated enough to restore the original 1930 requirement of one parking space for each apartment, but it still was not city-wide.

Los Angeles Regulations

Ordinance #111,049, adopted by the City of Los Angeles on March 14th, 1958, provided minimums that should have been required at least ten years earlier, as follows, for all new or altered construction:

a) For dwelling units, at least one parking space on the same lot, with a ratio of at least 1¼ spaces per unit when grouped six or more per lot.

b) For guest rooms, one parking space for each two guest rooms or suites up to 20; one for four, from 21 to 40; and one for six, in excess of 40.

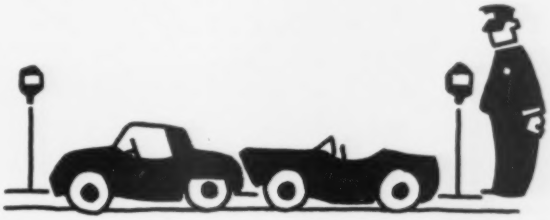
c) For commercial and industrial buildings with gross floor area of 5,000 square feet or more, one automobile parking space for each 500 square feet except that buildings in excess of 10,000 square feet used as warehouses need only one space for each 5,000 square feet in excess of the first 10,000 square feet.

d) At least one space required for each 500 square feet of floor area in any hospital, philanthropic institution, governmental office building, or similar use.

e) At least one space for each five seats in any theatre, church, high school, college, or university auditorium, or general auditorium, stadium or other similar place.

f) At least one space with each classroom contained in any elementary school. Each parking space must be at least 8 feet wide by 18 feet long. (There are certain downtown business district exceptions for certain buildings.)

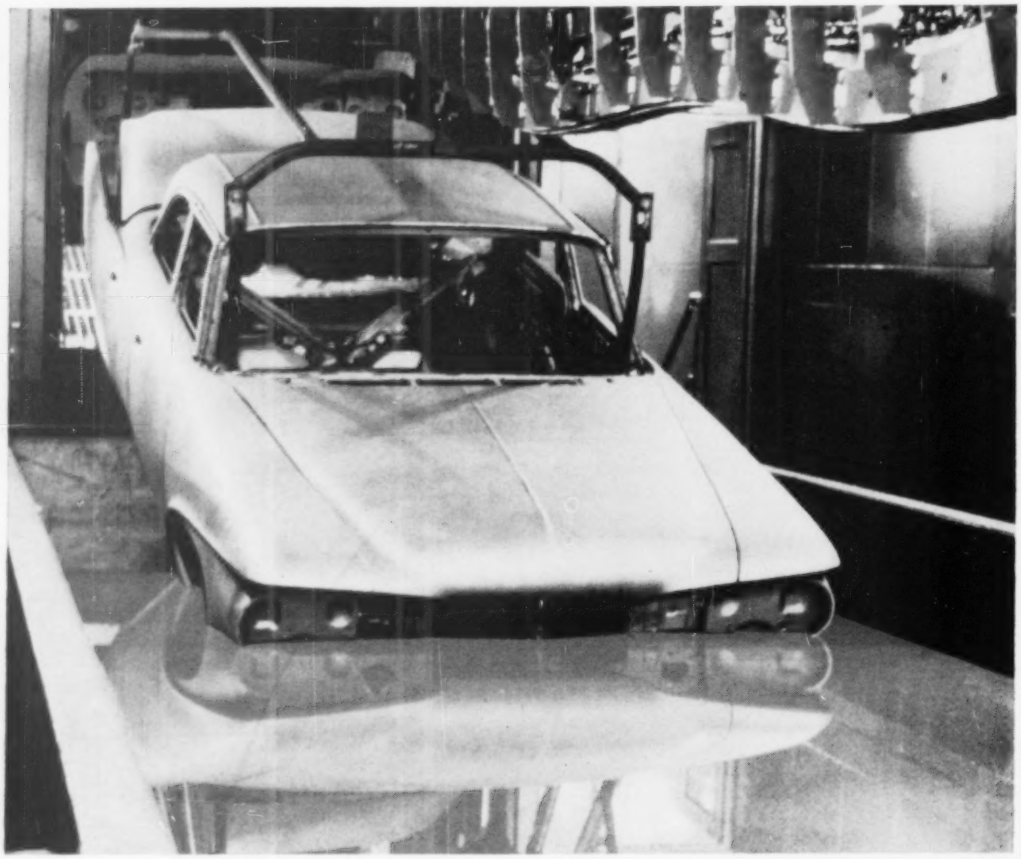
The automobile accounts today for more than 80% of the passenger miles traveled. Improvement of our highways and streets aggravates the parking situation, and the lack of adequate parking prohibits urban streets from functioning properly. A trip does not originate on the freeway nor is its destination an off-ramp. The highway and traffic engineers must consequently be as interested, active and concerned with the provision of terminal facilities as they are with movement facilities. Coupled with the phenomenal increase in the vehicular population to complicate the parking problem are the conflicting interests of the many groups in the various communities. The retailer wants customers parking in front of his store, while the community wants movement. The shopper wants short-time parking, and the employees want all-day parking. Emergency vehicles need rapid access to effect protective response and the transit people want exclusive curb lane usage. Truckers want loading zones and taxicabs want curb-side stands. The private garage or lot operator wants curb parking reduced or eliminated, and the police department wants parking regulations which will facilitate enforcement.



Until the interest groups begin thinking of the entire community rather than just of themselves and using the yardstick "the greatest benefit for the most people," rather than "me first," the problem cannot and will not be solved. One wouldn't think of allowing airplanes to park on the runways, nor would one permit water to be stored in the pipeline. Yet in street traffic we have allowed this to happen. When the movement problem is the most critical, the parking demand is the greatest in some areas. On about 25% of our major streets in Los Angeles "No Stopping" prohibitions apply during the directional peak hours. We have many more sound traffic engineering techniques to apply, but we may still run out of space—unless . . .

S. S. Taylor
General Manager
Department of Traffic
City of Los Angeles, Calif.

The life expectancy of Solid Plymouth Police Cars is around 200,000 miles. The big reason why—Unibody construction.



Plymouth Police Cars are built to last.

You probably won't keep a police car for 200,000 miles, but that's not the point. Every Plymouth Police Car is built to really last—built a new way, the solid Dura-Quiet Unibody way. Approximately 5400 precise welds join tough steel of body and frame into one sturdy, solid welded unit. This should let you keep Plymouth Police Cars a long time. You can also expect high resale value when you trade or sell.

They keep maintenance costs down.

Seven different protective baths, like the one shown above, give each Solid Plymouth Unibody a new kind of rust protection. Every Unibody also receives six special chemical sprays. This solid combination of baths and chemical sprays cuts body corrosion and maintenance 'way down.

Each one is built to do a special job.

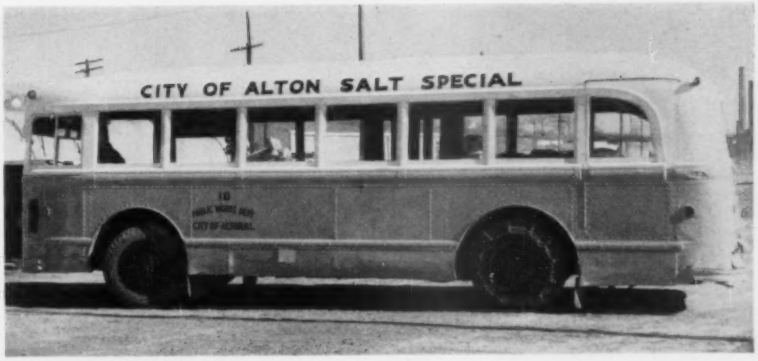
There are three Plymouth Police Car models. There's the Patroller 6 with the new 30-D Economy Six engine for city work. There's the Patroller Special 8 powered by the new Fury V-8 for both city and suburban use. There's Plymouth's Pursuit Special 8 with a Golden Commando 395 engine for highway and turnpike patrol. And, there's a choice of Police Emergency Wagons, too.

Doesn't all this sound interesting to you? Then visit your nearest Plymouth dealer today and you can check all the reasons for the Solid 1960 Plymouth's popularity with Police Departments throughout the country. Ask him for a free copy of the new Plymouth Police Car Catalog. There's no obligation.

A Chrysler-engineered product, built a new solid way to give you solid satisfaction.

SOLID PLYMOUTH 1960

Bus Becomes "Salt Special"



Salt spreading is on an express service basis in Alton, with all personnel and the salt conveniently out of the bad weather.

Remembering The American City article about Ferguson, Mo.'s use of a bus as a salt spreader (The American City, September, 1958, p. 15), Alton, Ill, received a used bus from the local transit company and proceeded to convert it into a practical salt-spreader unit for use on the city's many hilly streets.

Interior seats were removed and a Tarco "Scotchman" was mounted to discharge through an opening cut in the back of the vehicle. The bus will haul six to eight tons of bagged salt and carry the spreader operators in safety and comfort. The power and traction of the unit is superior to that of lighter trucks such as are frequently used for salt spreading.

Painted white over federal orange and named "City of Alton Salt Special" the new vehicle has seen rugged duty in the winter which has brought more snow to Alton than even "old settlers" can remember.

This is the second such conversion in the St. Louis area, and as far as is known, in the entire nation. ◄

Six-State Area to Receive Educational TV Broadcasts

Municipalities in a six-state area, embracing parts of Illinois, Indiana, Kentucky, Michigan, Ohio and Wisconsin, will be able to literally pull educational television broadcasts "out of the air" this year, as a result of a $7 million educational program recently announced.

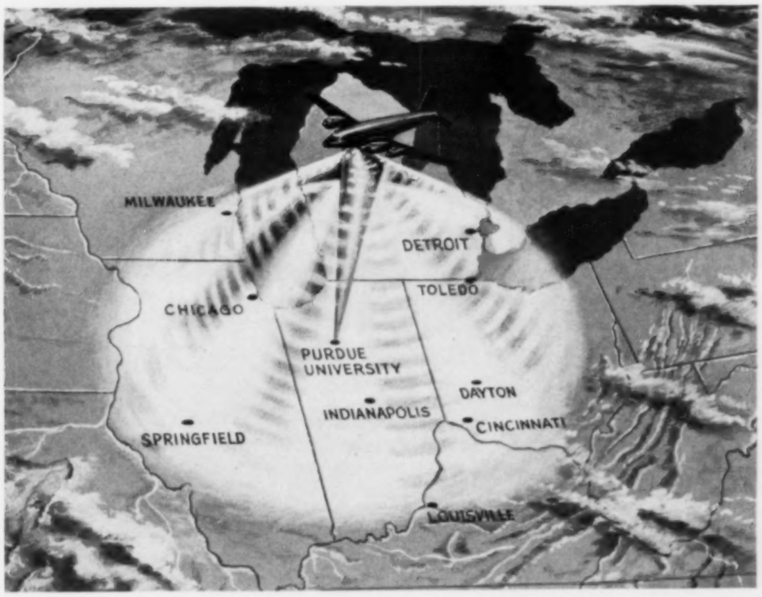
The project, jointly sponsored by the Ford Foundation and manufacturers of electronic equipment, involves the broadcasting of live and taped educational programs from Purdue University at Lafayette, Ind. Normally, such telecasts could be expected to reach receivers located a maximum of 50 miles from the transmitting station. However, by means of retransmitting the programs from a plane circling 20,000 feet overhead, it is expected that the effective radius can be increased to 400 miles.

A target date of January 1 has been set for the start of experimental broadcasts, with a full six-hour daily schedule slated for the beginning of the Fall '60 school term. Programming for the unique "flying classroom" will be determined by educator members of the newly formed Midwest Council on Airborne Television Instruction. Council members have already begun an exhaustive "talent search" among teachers currently working in the educational broadcasting field.

It is expected that 5,000,000 students attending some 13,000 schools and colleges will be in a position to benefit from the telecasts. According to Dr. Samuel M. Brownell, superintendent of the Detroit public schools and board chairman of the council, the only expense for the individual school districts will be the purchase of UHF television receivers for the classroom.

"The program is not seen as a technical enterprise to displace the classroom teacher," Dr. Brownell says. Instead, the broadcasts will free the teacher for individual instruction, and will enable smaller rural schools, which cannot afford expensive laboratory equipment, to broaden their curriculum.

Electronics engineers of the Westinghouse Electric Corporation, who pioneered the rebroadcasting of TV signals from a high flying airplane during the 1948 Republican National Convention in Philadelphia, are serving on the board of technical advisers to the council. Also participating in the project on an advisory level are representatives of CBS Laboratories and the General Dynamics Corporation. ◄◄



An estimated 5,000,000 students in a six-state area will be able to receive educational TV broadcasts from a plane circling Purdue University, according to a plan scheduled to start next Fall.

EXPIRED
5 10 15 20 25 30 35 40 45 50 55 60
1 HOUR
EXPIRED
60 MINUTE LIMIT
EACH PENNY — 6 MINUTES
EACH NICKEL — 30 MINUTES
ONE DIME — 60 MINUTES

you know this face

IF YOU ARE ONE OF . . .

105,000,000 *

PARK-O-METERS are serving the convenience of motorists and producing thousands of dollars of revenue in some 1450 cities on every continent of the world

* Rounded total population of cities in which Park-O-Meters are installed.

Magee-Hale
PARK-O-METER COMPANY
OKLAHOMA CITY, OKLAHOMA
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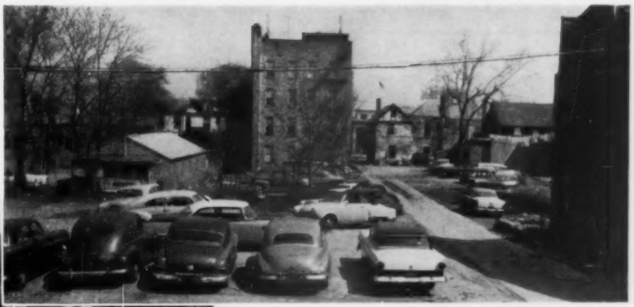
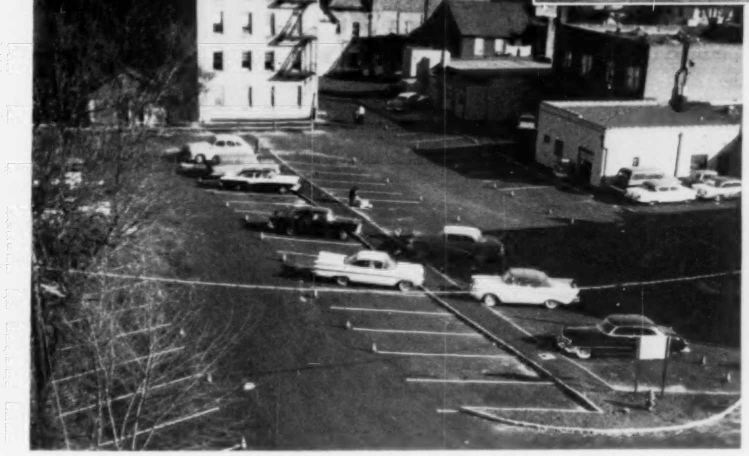
There is a Park-O-Meter model to meet every Specification for on-street or off-street installation.

- Accepts all coins, pennies, nickels, dimes, quarters or tokens through a single coin-slot.
- Adjustable for any time limit.
- Available in either completely automatic or manually operated . . . user energized . . . models.
- Proved through a quarter-century of operation in every climate.

ASK FOR DEMONSTRATION OR TRIAL INSTALLATION

Weeds, mud puddles and scattered buildings made organized parking impossible and actually encouraged unsanitary practices.





Cleaning up the area made room for 92 public parking spaces plus ample private parking space behind many shops. Light standards will be installed.

A joint venture by the Village of Larchmont, N. Y., and local business property owners results in . . .

More Than a Parking Lot

By **FRANCIS T. GRIFFIN***
Village Engineer

Cooperation between private business and government in Larchmont, N. Y., transformed the interior of a business block from chaos to order. As a result, 92 public parking stalls replaced weeds, mud puddles, trash and helter-skelter parking. The transformation also provided numerous areas for private parking.

The prime purpose of this project was to upgrade one of our two commercial areas through stimulation of business. It is too early to tell whether this goal will be achieved but one immediate result was the elimination of a messy, dangerous and unsightly condition.

Parking areas as such are not new, but the degree of cooperation achieved in this project is worth mentioning and the idea may be of help to others. It shows what can be done when business property owners and local government officials get together with a single purpose in mind.

Land Leased

A narrow alley bisecting the block gave access to the interior from two streets. This was blocked off to vehicular traffic; the city purchased an old house (the only single-family residence on the entire block), razed it and made a new entrance off a one-way street. Purchase of this 100x150-foot piece of property also provided additional parking spaces.

Cooperation on the part of the property owners took several forms. First, that portion of each lot making up the interior of the block was turned over to the village on a 20-year lease on the basis of one dollar a year per property owner. The size of each piece turned over to the city varied with the individual properties. In return, the village graded and surfaced the remaining pieces of private property between the outer edges of the public parking area and the various buildings and also cleaned up the entire area. These areas serve as private parking spaces for those employed in the various places of business on the block, as well as for loading or delivery areas.

Individual property owners also cooperated among themselves. For example, a metal five-car garage occupied a space near the center of the block. This had to be moved.

(Continued on page 154)

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* Mr. Griffin has been Village Engineer of Larchmont since 1953 and is a director of the N. Y.-N. J. Metropolitan Chapter of the American Public Works Association.

NEW FROM LYLE

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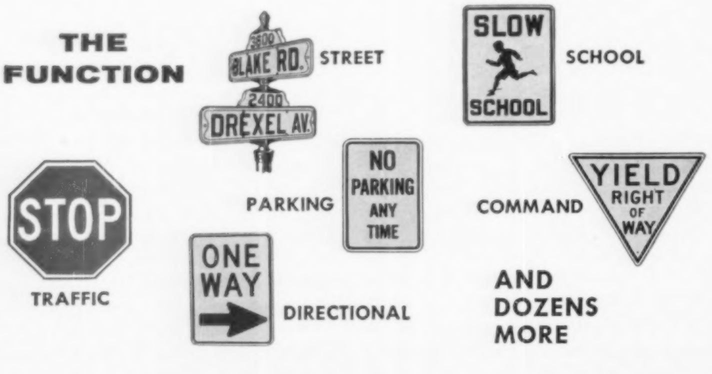
The function of a sign is very simple: to be seen and obeyed. But selecting the *most functional* sign for a given street or traffic problem is often more complicated.

That's why Lyle's National Signing Service can be of real value to you. Thousands of city, town, county and governmental officials have welcomed Lyle Field Representatives for their helpful advice and service.

Actually, in the past 45 years, Lyle representatives have worked with hundreds of different sign problems—perhaps, the very one that confronts you now. Proper sign materials, applicable national and state sign standards . . . these and the many other considerations so vital to the field of traffic control.

And, of course, a conference with a Lyle Field Representative puts you under no obligation.



Write for Lyle's free Sign Manual and the name of your nearest Lyle Sign Representative, if you don't already know him.

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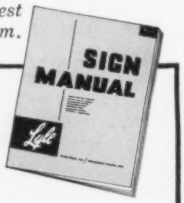


(Continued from page 153)

but the owner had insufficient room on his property for the building after leasing that portion needed by the village for the public parking area. The solution involved this property owner's immediate neighbor, who removed two small stalls from a multi-stall garage and allowed the metal garage to be placed on his land. The village acted as an intermediary in this transaction.

Only one party failed to participate in the land exchange, thereby reducing the total number of parking spaces possible by several stalls.

Construction Features

We awarded two contracts for the work; one to raze the old house and one to grade the area and construct the facility. The basic items include the installation of two fire hydrants requiring 430 feet of eight-inch cast-iron water main, one police call box, underground electrical work, including 450 feet of conduit for four light standards, relocating a five-car garage, about 1,400 lineal feet of cut-stone curbing, 4,400 square yards of type-A pavement and 2,200 square yards of type-B pavement, and a drainage system which includes 950 feet of pipe, 11 drain inlets and three manholes.

Type-A pavement, used for surfacing the entire public parking area and entrance drive, consists of a base course and a surface course. The base course consists of four inches of compacted 1½-inch rock penetrated with two gallons per square yard of hot emulsion asphalt, keyed with ¾-inch stone, broomed and rolled. This was surfaced with 1½ inches of plant mix, machine-laid TM-3 (N. Y. State Specifications) or equal asphalt concrete rolled with a five-ton roller.

Type-B pavement, used to surface all the private parking areas between the rear of the buildings and the public lot, consists of 1½-inch compacted TM-3 or equal placed over a base of existing material graded and rolled.

Where appropriate, we installed a two-rail rustic fence between the public parking area and the abutting private property to add a finished touch to the job.

In addition to the vehicular entrance, there are four pedestrian outlets to the streets.

At present the entire lot has a two-hour free parking limit during the day except for 14 more remote spaces that are restricted for all-day parking for a fee of $5 per

(Continued on page 156)

Plain talk about machine dictation:

"OKAY, a dictating machine sounds like a great idea . . . *but which one?*"

WITH so many makes and types of equipment on the market, it's not hard to get confused. A smart move is to look over Edison Voicewriter's *complete* line of quality machines—there's one that's ideal for each particular dictation requirement in your department.

Best of all—with Edison Voicewriter, you deal with a single nation-wide service staff . . . one with over 70 years' experience in business dictation!

For your officials and "volume" correspondents . . . Voicewriter!

The Voicewriter offers every convenience for the busy official or correspondent. Lets them "talk away" their work just by taking the mike. The Edison Voicewriter Diamond Disc is easy to handle—easy to transcribe from.

For your "occasional" correspondents . . . Televoice!

Televoice is ideal for agencies or departments where many individuals require dictating facilities. Connects each one to a central transcribing point through a handy dictating phone. Work gets out faster, more economically.

For your man on the go . . . Midgetape!

You can use the palm size Midgetape recorder for so many jobs! To record conversations . . . for verbal note taking during tours of inspection. Battery operated, weighs only 3 lbs. Completely portable. Use it anywhere!

A complete line of accessories—telephone recorders, conference units, carrying cases and so on—is available to "tailor" Edison equipment to your particular requirements.

Mail coupon today for details on the Voicewriter system to match your own special needs. No obligation, of course.

AC-5

To: Edison Voicewriter, West Orange, New Jersey

Okay, I'm interested! What do you think Voicewriter can do for me and my department?

Name____________________________________

Department________________________________

Street____________________________________

City__________________Zone______State__________

Edison Voicewriter

A product of Thomas A. Edison Industries.
McGraw-Edison Company, West Orange, N.J.
In Canada: 32 Front Street W., Toronto, Ont.

McGRAW EDISON

(Continued from page 154)

month. Night parking from 8 p.m. to 8 a.m. is restricted for use to holders of a permit tag costing $2.50 per month. These tags are also good in any of the other five parking areas now operated by the village.

Persons wishing to park in the lot overnight occasionally may do so at a cost of 50 cents. They need no tag but will receive a parking ticket during the night. This ticket plus 50 cents may be deposited in courtesy boxes provided and no record is made of the "ticketing." If payment is not made, a summons is then issued. This parking plan can be changed as the need arises.

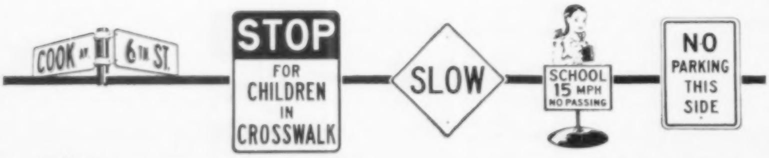
The total cost of the entire project amounted to approximately $108,000. Of this, 30% was paid directly by the village with the balance assessed against the benefited properties. This includes not only the property within the block, but also the business property on the opposite side of the three streets surrounding the block in question. (A public school occupies the property across the street on the fourth side of the block.) The assessments vary from a minimum of $200 to a maximum of $5,106 and are prorated according to benefit and location.

Now that the lot is complete, we are encouraging the various business houses to construct rear entrances and generally spruce up the back of each building. We are confident that the entire area will benefit from this cooperative program, and our business men share this confidence. ◄◄

TAKE A LONG LOOK
AHEAD
BEFORE BUYING SIGNS

MIRO-FLEX EMBOSSED SIGNS GIVE YEARS OF EXTRA SERVICE

You can be sure you're making the best buy in street name assemblies and traffic control signs when they are Miro-Flex. These high-quality signs are embossed to provide extra strength, rigidity, and legibility. They are finished to perfection for years of service in the most rugged of conditions. Miro-Flex can fulfill practically all your sign requirements and at prices that fit your budget year after year. Write for your free copy of the Miro-Flex catalog and prices.



The MIRO-FLEX CO., INC. 1824 EAST SECOND
WICHITA 14, KANSAS

Standard Traffic Signs Available for Immediate Delivery at Northeastern Warehouse
Koontz Equipment Corporation, 325 Ohio River Blvd., Emsworth, Pittsburgh 2, Pa.

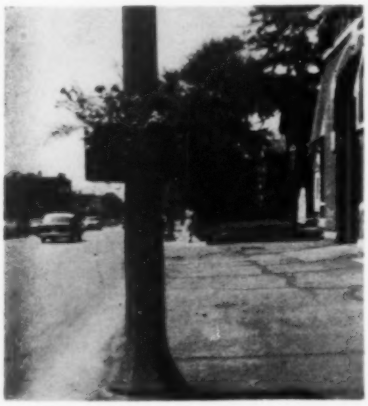
Flower Boxes On Light Poles

The twin cities of Neenah and Menasha, Wisconsin, have a more attractive downtown because of a program instigated by the editor of the local newspaper and the merchants of Neenah and Menasha.

A committee was formed to provide a fund for flower boxes for the 192 new electric light poles that were installed in the twin cities. About $3,000 was raised from merchant contributions.

The boxes were purchased with this money, assembled by the fire department, put by the street department, filled with topsoil and planted by the park department. There was no charge by these city departments for their labor and equipment.

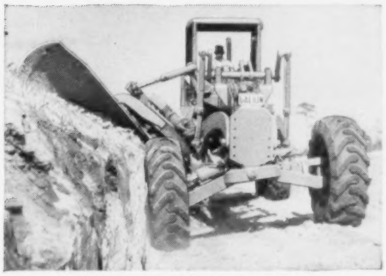
The flower boxes are made out of redwood and each merchant takes care of the flower box on the light pole that is in front of his place of business. He must keep the boxes watered, weeded and clean.



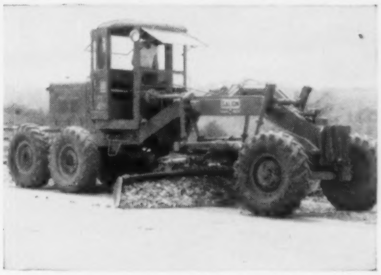
The flower box idea has spread to such a degree that most of the downtown merchants also have flower boxes of their own in front of their places of business. ◄◄

NOT 3 - NOT 4 - NOT 7 - *But* 9 GALION MOTOR GRADERS

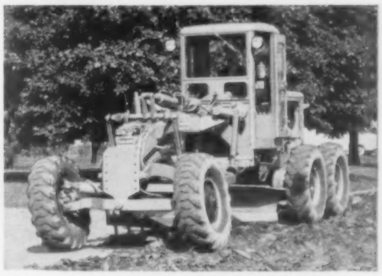
A size for every need and budget



Model T-700, 220 hp
*Grade-O-Matic Drive
Weight—42,000 lbs.
Power Shift Mlbd. 14'x30"x1"

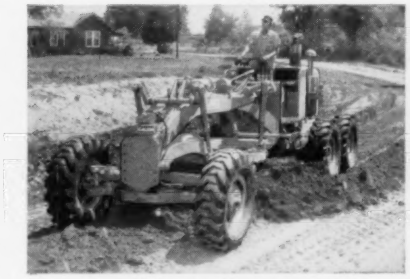


Model T-600, 160 hp
*Grade-O-Matic Drive
Weight—30,020 lbs.
Power Shift Mlbd. 12'x29"x¾"

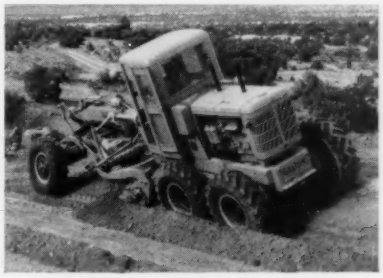


Model T-500, 125 hp
*Grade-O-Matic Drive
Weight—25,035 lbs.
Power Shift Mlbd. 12'x24½"x¾"

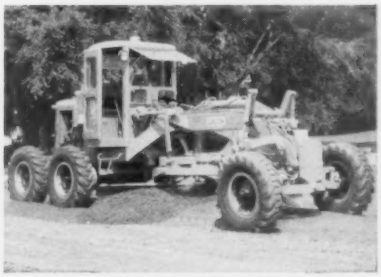
**Torque Converter and Power-Shift Transmission*



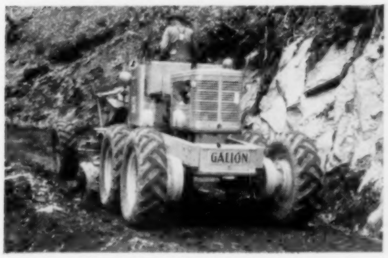
Model 160, 160 hp
Constant Mesh Transmission
Weight—28,520 lbs.
Power Shift Mlbd. 12'x29"x¾"



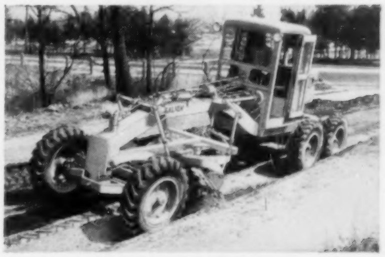
Model 118, 125 hp
Constant Mesh Transmission
Weight—24,910 lbs.
Moldboard—12'x24½"x¾"



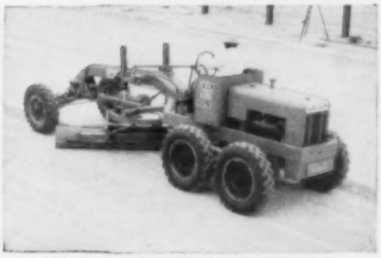
Model 104, 100 hp
Constant Mesh Transmission
Weight—23,900 lbs.
Moldboard—12'x24½"x¾"



Model 450, 85 hp
Constant Mesh Transmission
Weight—22,415 lbs.
Moldboard—12'x24½"x¾"



Model 303, 70 hp
Eight-Speed Transmission
Weight—15,750 lbs.
Moldboard—10'x20"x½"



Model 503, 58 hp
Four-Speed Transmission
Weight—9,460 lbs.
Moldboard—10'x16⅝"x⅝"

(All weights are with scarifier)

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VIBRATORY COMPACTORS • PNEUMATIC TIRE ROLLERS

THE GALION IRON WORKS & MFG. CO.
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Please send me complete information on the Galion Motor Graders checked below—

☐ Model T-700
☐ Model T-600
☐ Model T-500
☐ Model 160
☐ Model 118
☐ Model 104
☐ Model 450
☐ Model 303
☐ Model 503

Date________________

Name______________________________ Title________________

Firm or Dept. ________________________________

Street ________________________________

City__________________________ State________________

WILL PERFORM FOR A CENTURY WITH A RIVER ON ITS BACK

At left, you see a length of cast iron pipe being installed under the Floyd River in Iowa. This is part of a water feeder main which will reinforce the existing water supply system.

Despite the severe conditions of a river overhead, the inherent ruggedness of cast iron pipe promises at least a century of trouble-free performance, and rarely requires repairs or replacement.

And cast iron pipe's cement lining assures a continued full flow of water year after year. It's no wonder that more than 90% of the pipe used for water supply systems in our 50 largest cities is cast iron pipe!

CAST IRON PIPE RESEARCH ASSOCIATION,
Thos. F. Wolfe, Managing Director,
3440 Prudential Plaza, Chicago 1, Illinois

CAST IRON PIPE
THE MARK OF THE 100-YEAR PIPE

MANITOU SPRINGS, COLORADO—This Huber-Warco Maintainer has a busy schedule for the city. It is used to maintain the city's 25 miles of gravel streets; for new construction and to help on snow removal. City officials say it is an ideal machine for this type of work.

HUBER
WARCO

HUBER-WARCO
maintainers

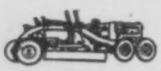
"Nine Machines In One"

VERSATILITY and year 'round performance are two important benefits of a Huber-Warco Maintainer. The basic machine has a nine-foot power sliding moldboard for routine grading work. Hydraulic controlled attachments quickly convert the Maintainer for service as Bulldozer, Lift-Loader, Scarifier, Berm Leveler, Side Dozer, Broom, Patch Roller and Snow Plow.

TORQUE CONVERTER combined with 45½ H.P. gasoline engine gives plenty of power for toughest jobs. Converter reduces shock loads, prolongs machine life, increases work capacity and cuts fuel consumption.

WORKING SPEEDS range from 1.7 to 8 M.P.H. Travel speed is 21 M.P.H. for quick movement between jobs. Weight is 6,250 lbs.—7,205 lbs. with calcium chloride in tires.
A complete line of optional equipment, in addition to the hydraulic attachments, is available for the Maintainer.

A trusted product name backed by respected distributor names from coast to coast

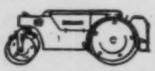


MOTOR GRADERS

Standard transmission
models from 83 to 160 H.P.
Torque converter and power
shift transmission models
from 102 to 195 H.P.

TANDEM ROLLERS

3-5 Ton • 4-6 Ton
Retractable • 5-8
Ton • 8-10 Ton •
8-12 Ton • 10-14 Ton



3-WHEEL ROLLERS

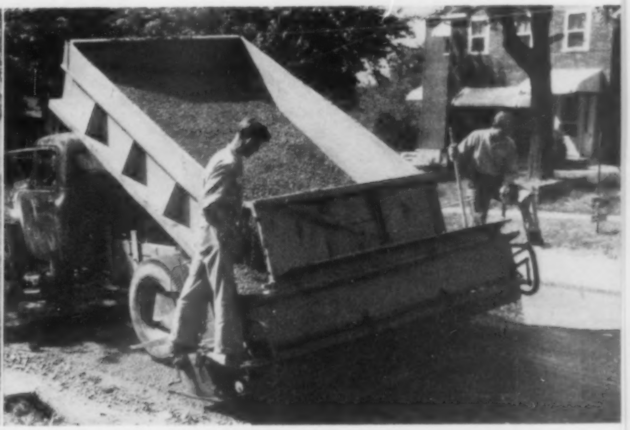
10-Ton • 12-Ton •
14-Ton Standard Weight
10-12 Ton • 12-14 Ton
Variable Weight

MAINTAINER

M-52 — 45½ H.P.
Attachments are Lift-Loader,
Broom, Bulldozer,
Patch Roller, Scarifier,
Snow Plow, Berm Leveler

HUBER-WARCO COMPANY Marion, Ohio, U.S.A.

A rented distributor places the tar on the street to be resurfaced.



The city-owned chip spreader follows closely behind to cover the tar.

No "Alligators" On Our Streets

Ypsilanti, Mich., organized a street-maintenance program that provides a top-grade street surface at 17.2 cents a square yard

The roller completes the work, giving the city a low-cost, high-quality surfacing.

By **OLAF R. PEARSON**
City Manager

The annoyance of "alligatoring" of street surfaces and the physical danger from chuck holes shouldn't bother the people of Ypsilanti in the future. And our corrective measures are saving them just about half the cost of older, more conventional maintenance methods.

Major Problem

We faced a major maintenance problem after the severe winter of 1958-59 and decided to correct it by an organized investigation of seal-coat materials to fit our particular circumstance. Most of our improved streets have concrete curbs and gutters and an asphalt surfacing. Moreover, most of the streets had not been resurfaced in the past eight years.

In order to get the work done promptly, we asked for estimates from contractors but their prices would have stretched the city's budget way out of line. The lowest estimate was 24 cents per square yard with a straight asphalt seal and pebble aggregate, and 34 cents for asphalt and a precoated aggregate to eliminate dust. This was understandable, since while the work looked large to us, it wasn't as much as a contractor would like and required lots of running around.

So, as is the case with many of our home owners, since we couldn't afford to have someone do it, we decided to do it ourselves. We were extremely fortunate to locate a contractor who sold us his five-year-old Buckeye chip spreader and a Cleaver - Brooks tank - car heater, of undetermined vintage but in good condition, for the bargain sum of $500. We next asked for bids on tar or asphalt and accepted the proposal of the Koppers Company for T-9 and T-10 tar at a price of 22 cents a gallon.

Realizing that the aggregate had to be as free of dust as possible, we decided on slag chip, specifying a 31A slag for a single seal and a combination of 31A and 25A for double seal. The pebble aggregate is cheaper but the slag chips can

(Continued on page 163)

Portland Profits By Resurfacing Streets With CATIONIC BITUMULS

Distributor applies Cationic Bitumuls at 0.2 gal./sq. yd. Note "skirt," designed to protect against drift or splash.

Truck immediately applies 25 lbs. of cover stone (¼"-#10) using tail-gate spreader. Two passes by three-wheel steel roller completes job.

The City of Portland, Oregon, is about to complete its second successful season of Single Surface Treating city streets using Cationic Bitumuls.

Last year, Cationic Bitumuls was used on more than 80% of a total of over one million square yards of such work. Costs averaged out at about 12 cents per sq. yd. as opposed to 16½ cents for similar work using an asphaltic cutback. This year, the program will include at least 800,000 square yards. Conservatively, this means a saving of over **$70,000 in two years!**

WHERE THE ECONOMY DEVELOPS

According to officials in Portland, the savings can be traced to the following factors: less aggregate required; smaller crew; less binder; faster operation.

In addition, Cationic Bitumuls holds even siliceous aggregates. And it extends the working season because it gives extra protection against wash-off of binder when early rain is encountered.

FUTURE PLANS

Current plans call for a continuing program involving the resurfacing of 50 to 60 miles of streets each year. At this rate the City will continue to save approximately $35,000 per year as compared to earlier methods.

Investigate the benefits of using Cationic Bitumuls in your street and road work. Call our nearest office for full information, today. Your community, too, can **profit** just as Portland is doing.

Here's the type of tightly-bound surface being put down with Cationic Bitumuls in Portland, Oregon.

American Bitumuls & Asphalt Company

320 MARKET, SAN FRANCISCO 20, CALIF.
Perth Amboy, N. J.
Baltimore 3, Md.
Cincinnati 38, Ohio
Atlanta 8, Ga.
Mobile, Ala.
St. Louis 17, Mo.
Tucson, Ariz.
Portland 8, Ore.
Oakland 1, Calif.
Inglewood, Calif.
San Juan 23, P. R.

BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts • LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

(Continued from page 161)

cover about 20% more surface per unit of weight and produce a superior surface.

To acquaint our city crews with this type of work, we conducted "dry runs" over a two-day period to give them the needed skills. We also had to rent a 3,000-gallon Etnyre distributor to spread the tar. This was provided by a local contractor. We rented an Austin-Western 5-to-8-ton roller from the company which supplied us with the aggregate.

Our crew consisted of 12 men: three truck drivers; three men on the chip spreader; two men to follow the spreader to level out overlaps and rake the chips along the curb; one to drag the streets after the chips had been spread, using a small Ford tractor towing ten feet of chain-link fence; a man on a five-ton roller to tack down the aggregate; one man assigned to the distributor, and one to the tank-car heater.

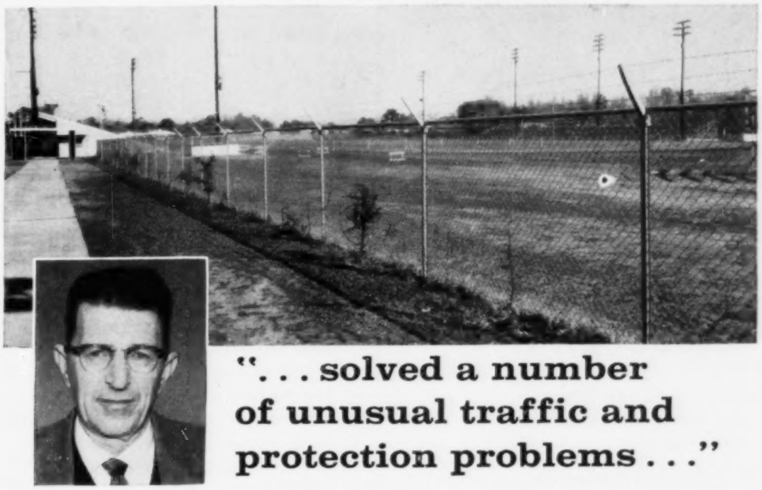
The first day, our crew sealed 55,000 square yards of paving area. As time went on, they boosted this record substantially.

Though we had extremely hot weather during construction, very little "bleeding" resulted. The crews quickly corrected the small amount that did occur with a light application of sand and chips. We received isolated complaints of dust which were easily corrected by wetting down the street with water. All such complaints were recorded against heavily traveled streets.

Costs

The entire program cost the city $33,827 to resurface 197,034 square yards of single and double seal. Our cost accounting indicated that we saved over $7,000 by using city crews and we have achieved a tight, highly non-skid surface. This past winter, although mild, did not produce any pavement difficulties. The unit cost of the surfacing was 17.164 cents a square yard. This included labor, material, and equipment rental.

Because of the fine results, we anticipate expansion of the program this year by 50%. Because of the savings, we anticipate that we can complete our initial four-year program in three years at a savings of over $20,000. ◄◄



"... solved a number of unusual traffic and protection problems..."

says J. C. Lindsey, Maintenance Supt., County School System, Princess Anne, Virginia

"Anchor Fence has been installed at all 18 schools in our county system. From past experience we know Anchor Fence can be depended on to stand up under hard usage with very little maintenance. As for our new high school, Anchor Fence solved a number of unusual traffic and protection problems. And of course it does a great job on guarding against trespassing, pilferage and accidents."

Call your local Anchor office today for a talk with one of Anchor's trained sales engineers. Write for free catalogue to: ANCHOR FENCE, 6563 Eastern Ave., Baltimore 24, Md.

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Division of ANCHOR POST PRODUCTS, INC.

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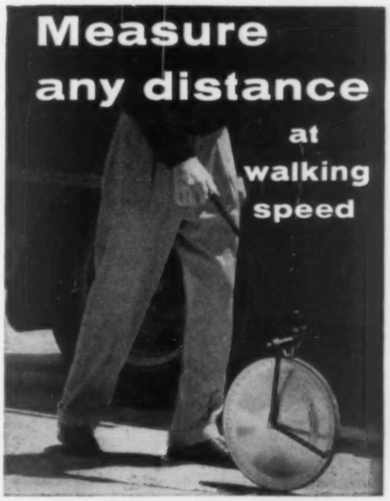


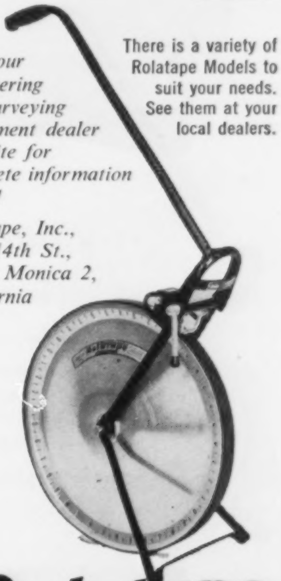
records 100,000 ft. *automatically!*

It's So Easy to measure with a Rolatape ... and you save time on every estimating job... no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.



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See your engineering and surveying instrument dealer or write for complete information today!

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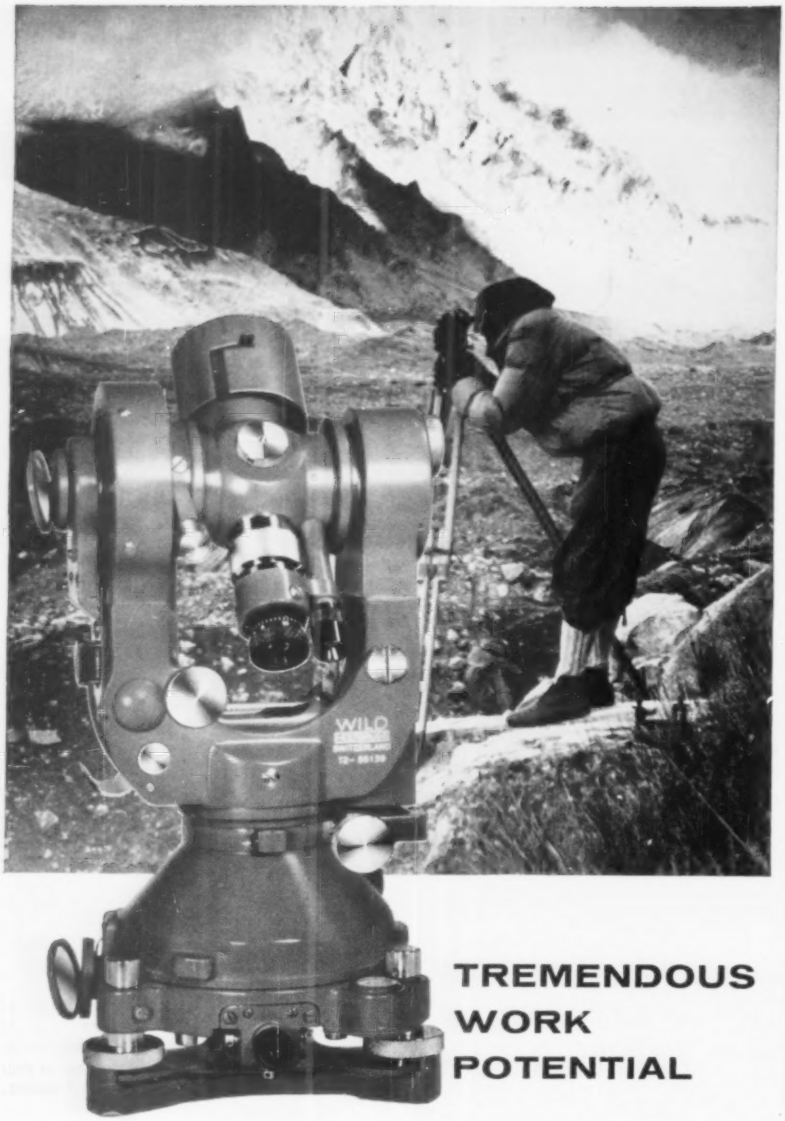

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T-2 UNIVERSAL THEODOLITE

The Wild T-2 enables the operator to work rapidly, precisely and steadily under conditions that may range from equatorial to antarctic.

Optical and mechanical excellence, plus negligible maintenance requirements, combine with a complete list of accessories to make the T-2 the finest instrument in its class by far.

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M.I.T. to Hold 22nd Summer Session on City and Regional Planning

The 22nd in the series of annual two-week Special Summer Programs in City and Regional Planning will be held at the Massachusetts Institute of Technology, in Cambridge, July 18th through July 29th.

The program will review the principles of city and regional planning and the administration of planning programs. The special feature this year will be discussion of the potential contributions of modern computer devices and techniques in the analysis of planning problems in such fields as population, land use, and circulation.

During the two weeks of the program, seminars will be held each week-day morning and afternoon, and there will also be two evening sessions each week. On Saturday, July 23rd, there will be an all-day field trip to some significant developments in suburban Boston. Special arrangements will also be made to observe some of the M.I.T. computer facilities in operation.

Tuition is $225; academic credit is not offered. The planning seminars will be under the general direction of Roland B. Greeley, Associate Professor of Regional Planning, M.I.T., Cambridge, Mass. ◄◄

Denver's Police Fees

On August 1, 1959, as a result of a study conducted by Denver's Management Office, a new police fee schedule was adopted, as follows:

Type of Service	*Fee*
1. Reproduced copies of accident reports (2 pages), each complete copy	**$1.00**
2. Reproduced copies of offense reports, per copy	**$1.00**
3. Local name check (for private, non-government individual or organization)	**$1.00**
4. a) Gun permits (includes required identification clearances and the permit itself)	**$5.00**
b) Yearly renewal	**$3.00**
5. Pawnshop check—file search made for commercial organization per item (No fee for private citizens.)	**$0.50**

Carl S. Becker
Management Officer
City and County of Denver
Denver, Colo.

New Rotomist 51 — compact and mobile for fast, effective mosquito control; air capacity of 12,000 c.f.m.; 75 gal. tank.

only mist sprayers
give lasting, more
effective mosquito
control, plus thorough
shade tree protection...

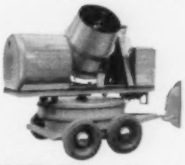
NOW John BEAN® OFFERS 5 ROTOMIST® SPRAYERS

Rotomist-equipped communities report that the residual effects of mist spraying last up to two weeks after application — proof of Rotomist's mosquito control effectiveness! And, for thorough shade tree spraying, Rotomist performance is unequalled. Exclusive straight-through air flow design delivers more cubic feet of air capacity per horsepower. Spray reaches even the critical topmost branches for complete tree coverage. For the best spraying protection available for your community, see your Rotomist dealer or send coupon for details.

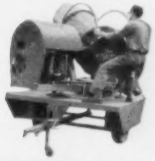
MIST SPRAYING GIVES YOU THESE ADVANTAGES

- greater rate-of-work capacity — cover more trees per day
- long lasting, residual mosquito control
- spray can be applied during daytime, even under light wind conditions

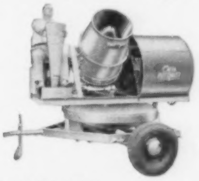
There's a Rotomist for every community need and budget



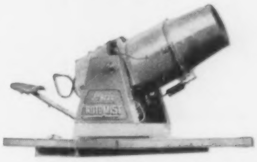
MODEL 300 — Air capacity 60,000 c.f.m. — tank capacity 300 gal.



MODEL 75 — Air capacity 19,000 c.f.m. — tank capacity 75 gal.



MODEL 100 — Air capacity 28,000 c.f.m. — tank capacity 100 gal.



MODEL 50 — Air capacity 12,000 c.f.m. — Uses spray material supply of most any high pressure sprayer.

FOR SPECIAL DUTCH ELM DISEASE AND MOSQUITO CONTROL DATA, PLUS FREE CATALOGS — CHECK, CLIP AND MAIL COUPON ATTACHED TO YOUR CARD OR LETTERHEAD

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FOOD MACHINERY AND CHEMICAL CORPORATION fmc
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Send me:

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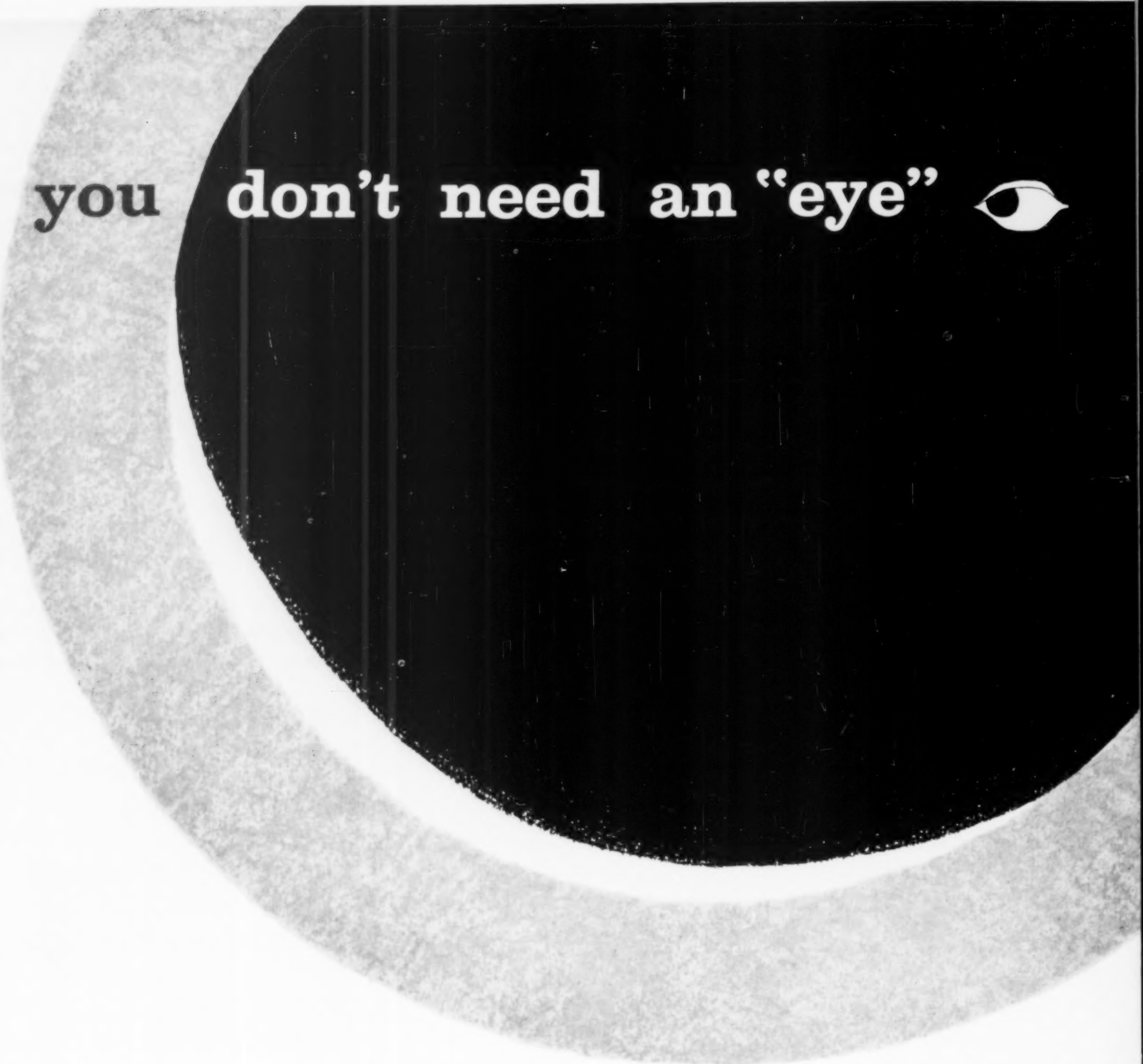
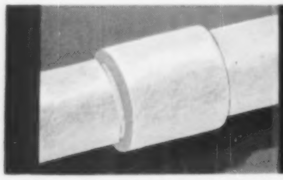
☐ Facts on Dutch Elm Disease
☐ Hydraulic Sprayer Catalog
☐ Facts on Mosquito Control

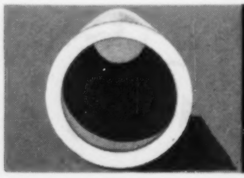
you don't need an "eye"



Keasbey & Mattison



Exclusive, patented "K&M" FLUID-TITE Coupling forms a permanent leakproof seal as pipe is joined.



Permanently smooth bore keeps pumping costs low. Provides excellent flow characteristics.

👁 out for trouble after you install

"K&M"

ASBESTOS-CEMENT SEWER PIPE

"K&M" Asbestos-Cement Sewer Pipe helps you provide the best sewer service available . . . with tax savings that go on year after year.

This thrifty pipe is infiltration-proof, even when external water pressure is 25 psi. Prevents your sewer system from reaching full capacity years ahead of schedule, due to water infiltration. "K&M" Asbestos-Cement Sewer Pipe, with exclusive, patented FLUID-TITE Coupling, forms a permanently tight seal.

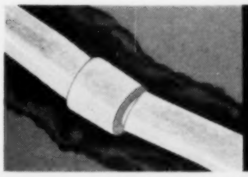
In planning your system, you can build on flatter grades with "K&M" Asbestos-Cement Sewer Pipe. Need fewer lift stations. The permanently smooth bore of "K&M" Asbestos-Cement Sewer Pipe has a Manning factor of n = 0.010. Flow characteristics are excellent. Inspections and treatment loads become less frequent.

This thriftiness carries over into installation. Neither weather nor soil conditions need hold up work. The "K&M" FLUID-TITE Coupling slides on in just two easy steps. Longer pipe lengths minimize the number of joints.

Write today for more detailed and illustrated information on hardy "K&M" Asbestos-Cement Sewer Pipe. Learn why thousands of progressive communities have turned to this durable quality pipe. Write to: Keasbey & Mattison Company, Ambler, Pa., Dept. P-550.

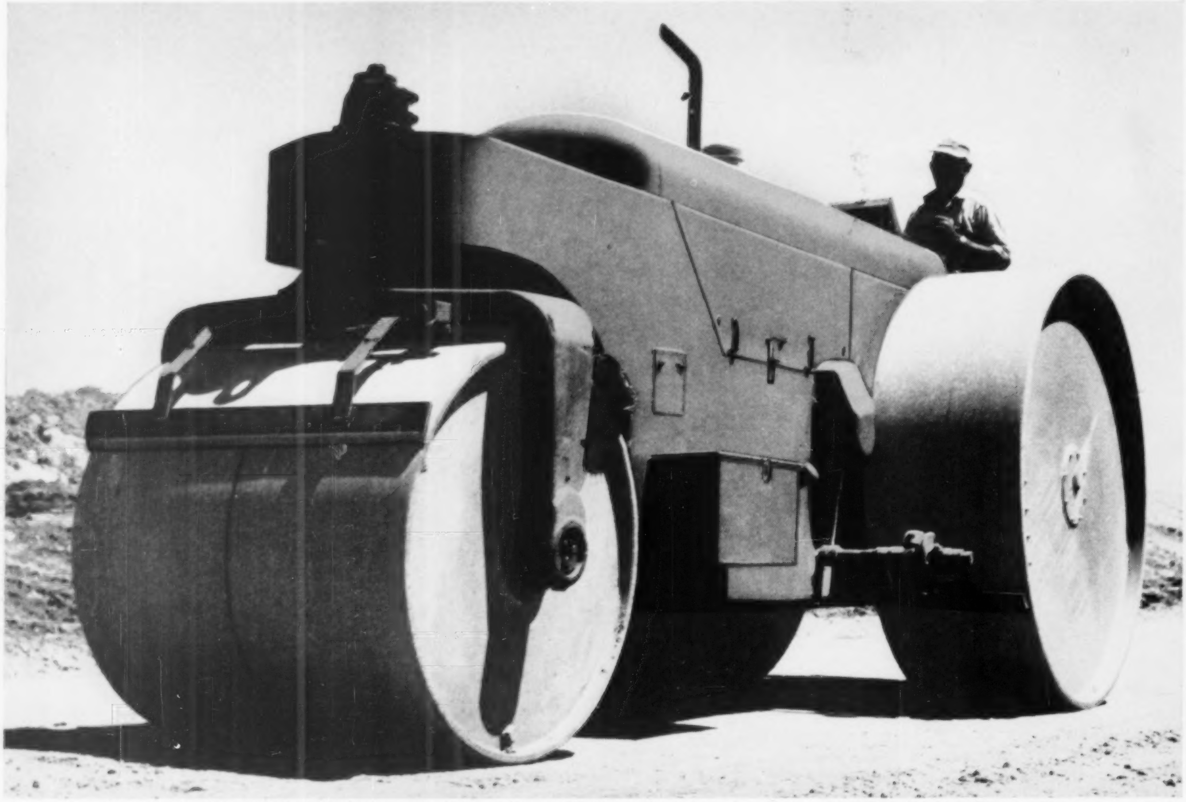
son at Ambler

K·M
BEST IN ASBESTOS



5° deflection permitted per pipe length. It's as easy to install curved lines as straight lines.

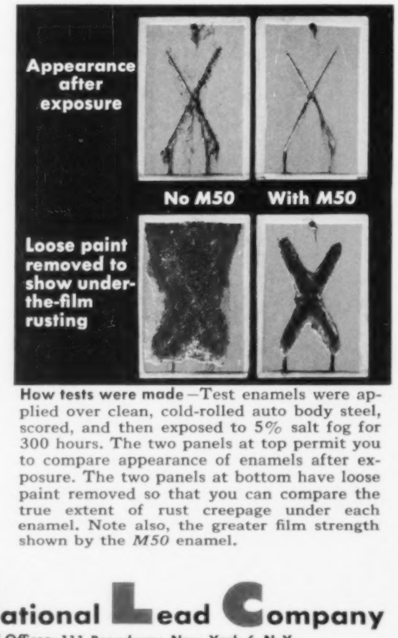
"K&M" PLASTIC SEWER PIPE complements "K&M" Asbestos-Cement Sewer Pipe in many sewer systems. Excellent flow characteristics and permanently tight joints. Write for Technical Bulletins on "K&M" High-Impact Styrene-Alloy Sewer Pipe. Dept. P-550.



New enamels made with *M50* pigment give equipment better . . . longer protection . . . control under-the-film rusting.

New! One-coat equipment enamels with built-in rust inhibition . . .

keep on fighting rust even when damaged in service



Appearance after exposure
No M50
With M50
Loose paint removed to show under-the-film rusting

How tests were made—Test enamels were applied over clean, cold-rolled auto body steel, scored, and then exposed to 5% salt fog for 300 hours. The two panels at top permit you to compare appearance of enamels after exposure. The two panels at bottom have loose paint removed so that you can compare the true extent of rust creepage under each enamel. Note also, the greater film strength shown by the *M50* enamel.

Now, for the first time, you can have the rust inhibition of a primer and the durability of a finish coat, combined in a single coat of enamel.

And what is more, the paint can be tinted to match most standard equipment colors.

What gives these new one-coat enamels their exceptional properties is a unique new type of pigment, *M50*® basic lead silico chromate. In this pigment, the active ingredient is basic lead chromate solidly fused to an inert core. Fused lead chromate has not only exceptional rust inhibiting action, but also superior resistance to weathering.

Greatly inhibits under-the-film rust creepage, too

As you've probably noticed, when ordinary enamels are nicked or damaged in service the rust that starts spreads under the paint in no time. As this rust creepage progresses, paint flakes off to open the way for further corrosion.

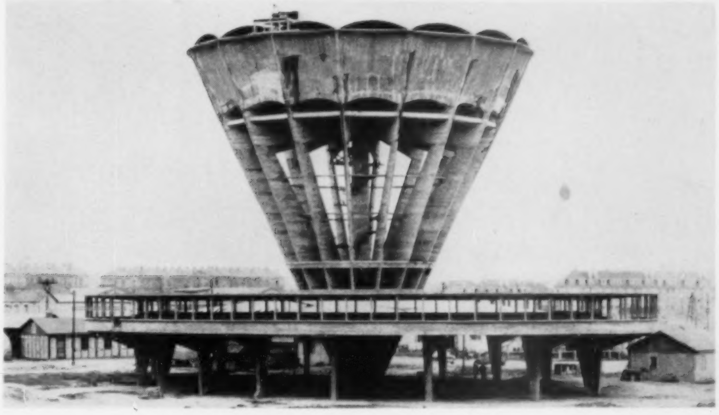
Exposure tests (see photograph at right) at National Lead Laboratories show that this damage is very sharply reduced when *M50* pigment is in the enamel.

Before you order paint again . . . look into these unusual new enamels. They can be made up by your regular paint suppliers in nearly all standard equipment colors.

M50® *an* **oncor** TRADEMARK *Pigment . . . A Development of* **National Lead Company**

General Offices: 111 Broadway, New York 6, N. Y.

Imaginative thinking on the part of the architect and engineer produced this interesting water tank and market structure.



A Water Tower and Market Combined

A water tower can be an attractive structure. The 650,000-gallon reinforced-concrete tank built to serve a suburb of Caen, France, proves this point. But the builders went further in that they used the water tower as a basic part of a market, administrative and welfare center.

Constructed entirely of reinforced concrete, the 100-foot-high tower is supported by 16 converging supports forming an inverted cone, and a central hollow column of 4 feet 2 inches internal diameter. Three ring beams brace the structure and add to its stability. The lowest one prevents spreading of the fins or supports; the center one, located just below the tank, prevents spreading of the fins and helps resist the pressure of the water; while the ring at the top of the tank resists water pressure and roof thrust.

Beams radiating from the center column and hinged to peripheral columns around the outer edge of the market structure support the market roof. The roof itself consists of a series of radiating reinforced concrete shells. The market, elliptical in shape better to fit the site, has a clear area amounting to 10,000 square feet.

The roof and the floor of the water tank are formed of 16 radiating reinforced concrete shells which, since they are always in compression, insure water tightness and promote the most economical use of materials. Sixteen curved concrete shells make up the fluted tank walls.

The use of thin shell construction throughout made it possible to build the entire structure with only about 1,308 cubic yards of concrete and 127 tons of high-strength, twisted reinforcing steel. Narrow-boarded timber forms provided an interesting texture to the finished structure.

The new tank will serve the suburban community of Caen-La Gueriniere with its 2,200 dwellings and some 10,000 people. It will also act as a reserve for the parent town of Caen.

Rene Sarger and Guillaume Gillet were the engineer and architect, respectively, on the project.

←

The center column, besides housing pipes, serves as a newel to the helical staircase. Extended landing platforms also form guides for the water pipes.

→

Sixteen supports, converging at the base of the structure, carry the weight of the tower and the market roof.

Photos courtesy of the Concrete Quarterly, London.

WHY ALL THESE LARK ORDERS FROM CITY AND STATE GOVERNMENTS?

SOME SIGNIFICANT RE-ORDERS, FILLED IN JUST THE LAST 60 DAYS—

234 MORE LARKS to the State of California (515 Lark V-8's in all).

159 MORE LARKS to the State of Oregon.

41 MORE LARKS to the State of Indiana.

56 MORE LARKS to the Milwaukee Police Dept.

50 MORE LARKS to the State of Pennsylvania.

(And 491 new Larks delivered to the U.S. Government —largest order for 1960 compact cars placed by General Services Administration.)

TELL US MORE ABOUT LARK SAVINGS!
Fleet Sales Division, Studebaker-Packard Corp.,
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☐ Send us informative literature only
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263 city and county governments have chosen THE LARK for every kind of fleet use—from public health nurse to police and emergency cars.

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LOWER NET COST PROVEN by official trade-in figures, deducted from original fleet price per car.

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BUDGET-WISE BUYERS

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BY STUDEBAKER

The City Tells Its Story

Edited by PAN DODD EIMON

Municipal Public Relations

Municipal Ideas That Bloom in May—

Library promotions, police tour folder, recreation "stock," and improvement report

The library at Ironton, Mo., (population 1,500) is proof that big city libraries have no corner on promotional ideas. Small-town operation though it be (a branch of the Ozark Regional System), the library goes all out to do a sound public relations job. Ironton library public relations goals include:

1. More people using libary services and facilities.
2. The library as a "service" point for community development activities.
3. A "this is *my* library" attitude on the part of Ironton citizens.

Librarian Gene Martin doesn't stop long enough to recognize that, with a total of less than 28,000 people in the region and a library budget of under $36,000, he isn't expected to "do as they do in St. Louis." Instead, he and a staff of nine, including an artist-bookkeeper who devotes more than half her time to public relations, work effectively within these limits.

Last year, Ironton library circulation was a phenomenal 16,893. In the region, nearly 109,000 items were circulated.

How Martin & Colleagues do it ("much of the credit goes to our citizen library board," he says) involves ideas that any community library can copy. Here are the promotional techniques used.

"Come-In" Window Displays. Brilliantly-colored prints, the newest art books, biographies of artists, and a bust of Matisse are put together with style and charm for one Ironton library window display. In June, there'll be a multi-colored drawing of fish as a backdrop for books on how to fish, how to cook fish, where to catch the big ones. Fishing gear will be scattered among the books. If last year's experience is repeated, the window will convince many a fisherman he ought to borrow a book to read before, after, or during his angling!

Window-designer Dorothy Houston offers these tips: "The window needs to be bright. We keep it simple. We try to get one idea across and one only. We change the window often. We splurge sometimes and buy bright red burlap for a background curtain. But ideas are at a premium; our materials come from our own shelves and the dime store."

Book Reviews. Library staff members double as book reviewers, or furnish notes and data to others for book reviews before Ironton groups. The library goes a step further. It reproduces program folders containing a few words about the book reviewed, the author, the Ironton library, and other books on related subjects available at the library. These program folders are dressed up too. For a recent review of "The Hidden Persuaders" by Vance Packard, program notes were stapled inside a cover cut from the full-colored advertising pages of slick magazines. These book reviews and program notes stimulate book borrowing and help create library "kinship" with the various community organizations.

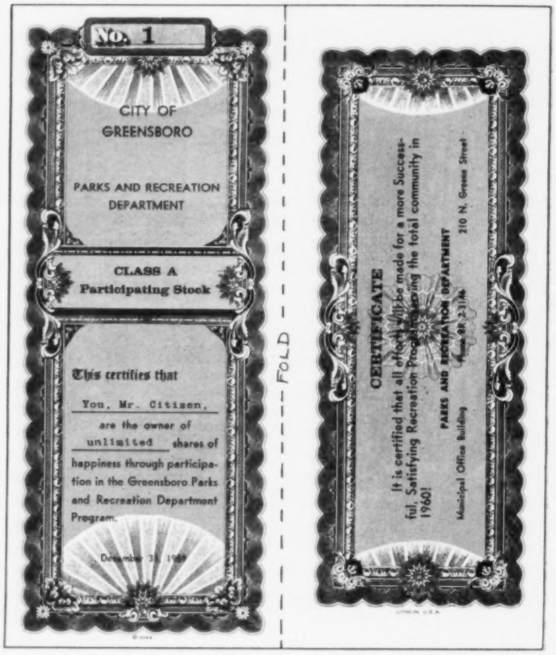
Newspaper Articles. Two weekly newspapers are published in Ironton and the editors of both are glad to carry information about books available from the library. Suggests Mr. Martin, "We like to publicize new book arrivals, of course. But we like to write something on old books occasionally, too, especially when a current news story of local, national, or international interest calls forth the title of a book, not current, but pertinent." His editor-approved role on good library newspaper notes: "Pack them full of the newspaper's stock-in-trade—news!"

Special Education. Ironton has a Great Books group that is in its twelfth year and is one of the country's oldest. The library purchases books at its discount, on order for Great Books members. It also makes available copies of the discussion books to persons who wish to borrow them.

(Continued on page 172)

Prints, art books combine for a window display.

(Continued from page 171)



No. 1

CITY OF
GREENSBORO

PARKS AND RECREATION
DEPARTMENT

CLASS A
Participating Stock

This certifies that

You, Mr. Citizen,

are the owner of

unlimited shares of happiness through participation in the Greensboro Parks and Recreation Department Program.

December 31, 1959

FOLD

CERTIFICATE

It is certified that all efforts will be made for a more Successful, Satisfying Recreation Program serving the total community in 1960!

PARKS AND RECREATION DEPARTMENT

Municipal Office Building Phone BR 23146 210 N. Greene Street

Stock in the Greensboro Recreation Department.

Art shows, film showings, discussion groups are organized to help adults make better use of library services. Last year, 44,000 people (nearly double the population served) saw library film presentations.

Community Events. The Ironton library takes a leader role in community-wide events. It has an annual display at the Iron County Fair. When Ironton and the county observed their 100th anniversary, the library staff designed a float for the parade, skits, and special windows. When the Ironton High School, Class of 1959, needed a theme for its senior party, the creative library staff came up with an idea, helped design decorations and favors.

Annual Reports. Reports go out every year in the Christmas season and combine report statistics with season's greetings. The three sheets of mimeographed notes cover highlights of the past year, plans ahead, information on circulation, new purchases, and expenditures. Original art work is combined with a full-color local photograph to make a handsome cover for the report.

Handbills. Free-hand drawing on a stencil and an inexpensive reproduction process make handbills cheap and effective. The Ironton library uses these to advertise new books and films and to introduce a new library activity. The handbills are distributed at the library and from other public places. Exemplary is one on modern plays available from the library. Regular typing-size paper is folded once to form a "cover" and one inside page. Names of the plays are displayed on the drawing of a theater marquee on the "cover." Inside, mimeographed notes capsule the message of "J. B.," "Our Town," "St. Joan," "A Touch of the Poet," "Sunrise at Campobello," and "Look Homeward, Angel."

* * *

A painting, what is it? This is the question raised and answered in a unique adult education activity of the Rolla, Mo., City Library. Librarian Mrs. Leola Miller uses the Metropolitan Museum of Art's course—portfolios, prints, text—for the 10 A.M. bi-monthly discussion on art.

This offering is one example of the ways the Rolla City Library continuously experiments in mind-stretching service to local people. It is one reason why the library, located in the city's utility building, is visited frequently and enthusiastically by Rolla people, young and old.

Other reasons: Saturday Spanish classes for children, semi-annual art exhibits of work by local people, a weekly story hour, stimulating bulletin-board materials and notices, and an all-glass display case, set in the middle of the library, available for use by local hobbyists and collectors. Once-a-year, citizens flock to the library's open house to be reminded of the bargain they get for the 2-mill tax they pay for library services.

* * *

Stock is something nearly everybody would like to own and, in Greensboro, N. C., everybody does! The Greensboro Parks and Recreation Department has issued "Class A, Participating Stock" stating that every citizen is an owner of "unlimited shares of happiness through participation in the Greensboro Parks and Recreation Program."

The 9¼-by-15-inch sheet of green-scrolled stock paper folds three times to fit into a business envelope. The financial report lists assets (staff, budget, facilities); dividends (activities for the past year); and liabilities (the area and population served). Stockholders are told that "to derive full benefit from . . . shares," they must support the recreation program. The stock idea is carried out in another detail. The department certifies, in official form, that "all efforts will be made for a more successful, satisfying recreation program, serving the total community" this year.

A stock certificate like Greensboro's could be used for a general city report or for the report of almost any department of the city's government.

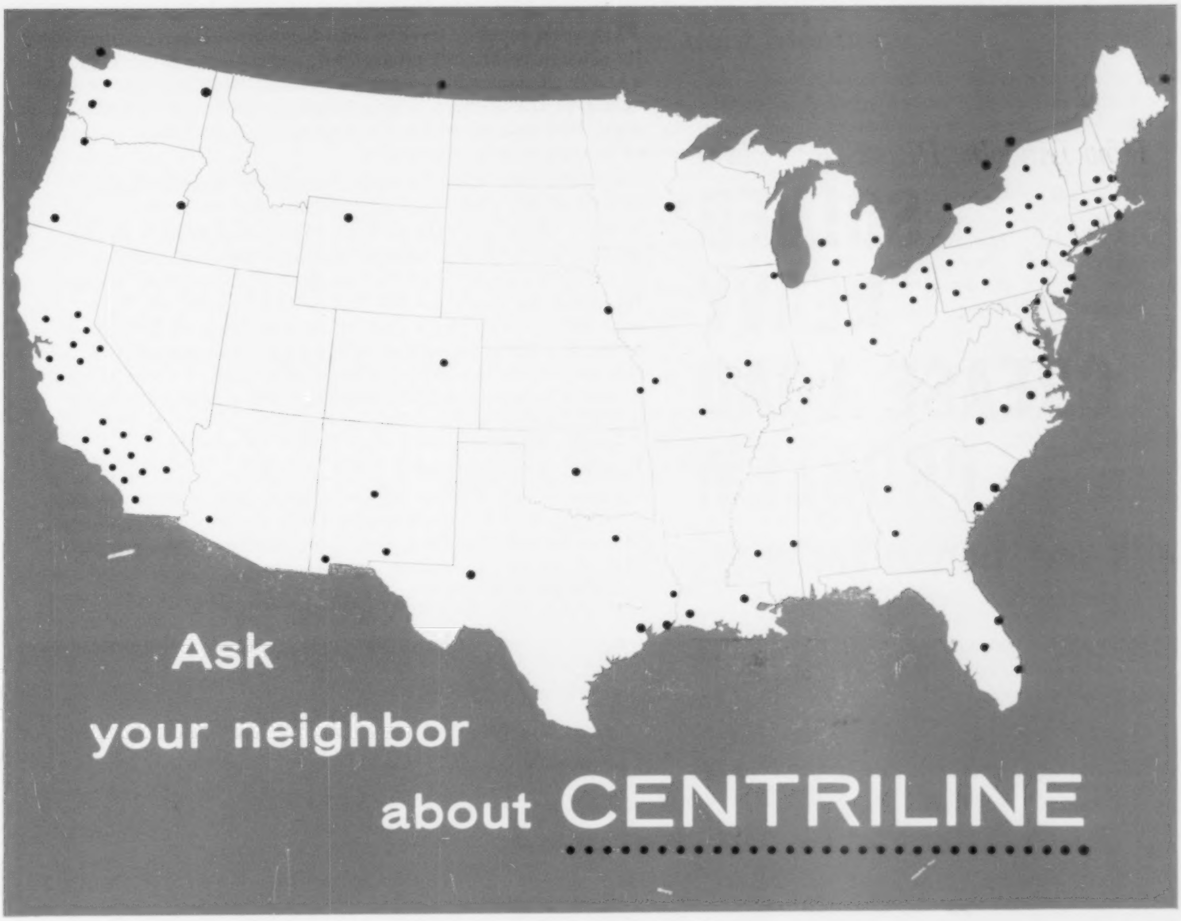
* * *

"Why?" was a question the people of Ft. Lauderdale, Fla., were bound to ask when the municipal police force moved out of small, but only ten-year-old, quarters into a new and spacious building. So the Ft. Lauderdale Police Department produced and distributed a printed "tour" of the new building. The tour folder explains how the department grew from 37 men in 1948 to the present 187 and how, in turn, the old 6,000 square feet became inadequate.

By means of narrative and photographs, the "tour" takes readers around all 41,660 square feet of the new headquarters.

The building was planned to stress good public relations. For instance, there is immediate access to the complaint desk on the public lobby,

(Continued on page 175)



Spotted on this map are some of the places that have been served by the Centriline Process

Chances are that one of your colleagues has rejuvenated some of his city's piping by Centriline reconditioning. Here's your chance to find out.

Briefly, this process smoothly lines piping—*in place*—with cement-mortar, creating a pipe-within-a-pipe. This vastly increases carrying capacity, stops leakage, prevents corrosion and tuberculation, and prolongs pipe life indefinitely. Pressure goes up, pumping cost goes down, and there's no need to disturb traffic to replace mains. Over 6,000,000 feet of piping, from 4″ to 144″ diameter, have been treated by Centriline. *Ask your neighbor.*

Write today for a list of nearby officials whose cities have cut inconvenience and costs with this pipe-saving process. Hear what they have to say about Centriline. Then write or call us. We'll be glad to show you how Centriline can help *you* solve the problems of pipe conditioning.

BOOTHS 153-154
A.W.W.A.
CONVENTION

CENTRILINE CORPORATION

A Subsidiary of Raymond International Inc.

140 CEDAR STREET • NEW YORK 6, N. Y.

Branch offices in principal cities of the United States, Canada, and Latin America.

How Lincoln, Ill., sewage plant

SOLVED HEAVY GREASE LOAD PROBLEM

with one Dorrco Vacuator®

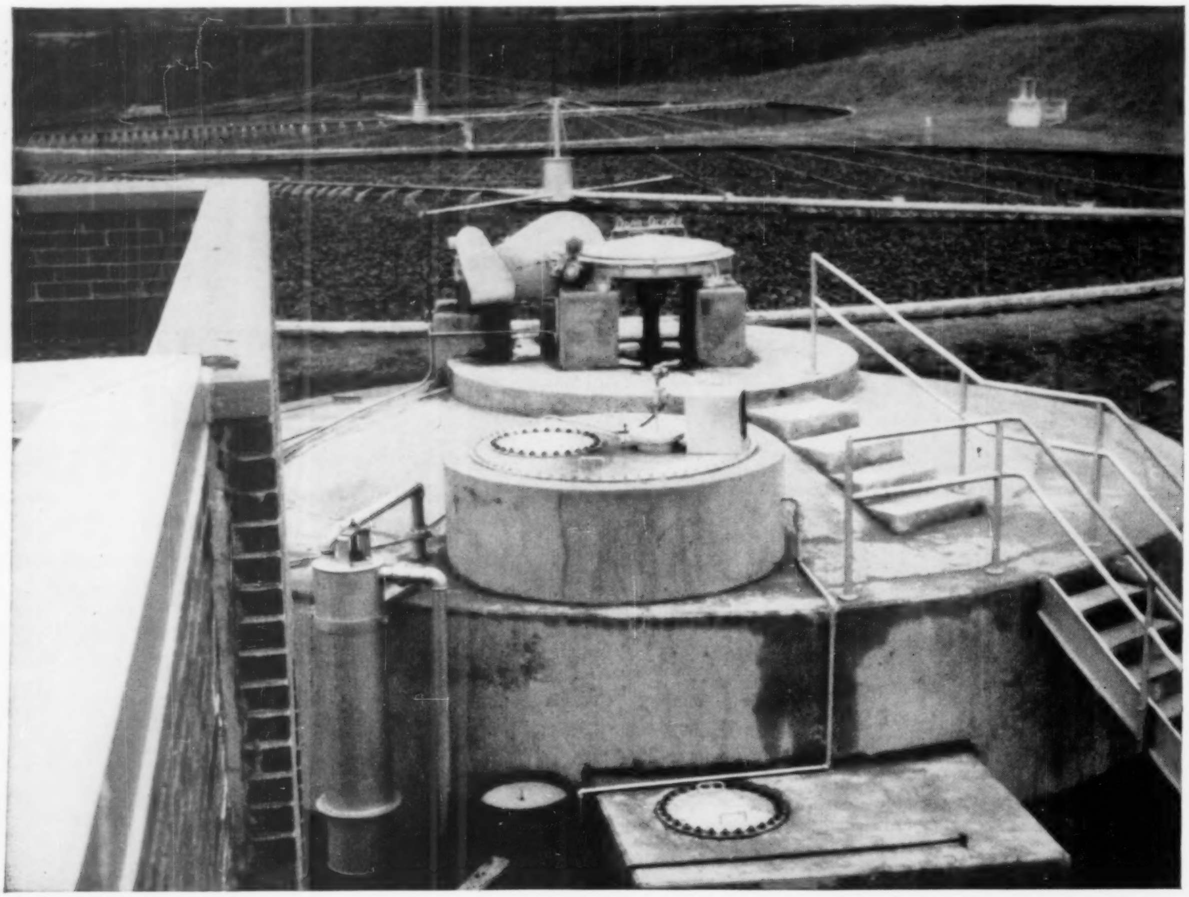
A large institution's decision to grind all its garbage threw a monkey wrench into Lincoln's plans for improving its sewage treatment plant. The institution was already a heavy grease contributor. Increased strength of the sewage would be tremendous. Calculations showed that Lincoln must be prepared to handle wastes equal to those of a town double its size!

Could the town alter its plans, handle the heavier loads and do it efficiently and economically?

It did – with the help of Dorr-Oliver equipment. In one major move a 26′ dia. Dorrco Vacuator was installed for primary treatment and the original settling tanks became intermediate tanks. In the first year of operation, BOD removal through the Vacuator ranged from 19 to 27% – averaging 22%. Suspended solids removal averaged 34%. Not only that, the Dorrco Vacuator proved it could reduce digester requirements by pumping thick sludge averaging 3.6% in solids content to the digester. In short, the Dorrco Vacuator was a vital factor in solving Lincoln's problems – for years to come.

Complete information on the Dorrco Vacuator is readily available. Ask for Bulletin No. 6301. Or write Dorr-Oliver Incorporated, Stamford, Conn. for details on the complete line of sewage treatment equipment.

Plant Superintendent: Lawrence Arthur
Consulting Engineers: Crawford, Murphy & Tilly, Springfield, Illinois



DORR-OLIVER

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

(Continued from page 172)

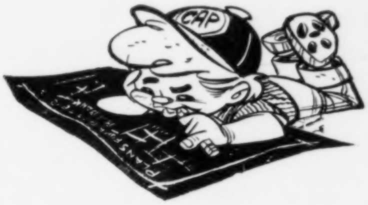
an open counter for the records bureau, and direct entrance to public rest rooms. There is also a press room for use of newspaper, wire service, radio, and television reporters.

The police headquarters tour folder is produced in bright blue on white paper. It is being distributed in public buildings throughout Ft. Lauderdale, to business houses, and is available to community and service clubs.

* * *

Capital improvements at the halfway mark—after five years of a ten-year program—are reported in a new Burbank, Calif., document. Some cities seem to forget about city-citizen relations after voters have been talked into saying "yes" to a bond issue. But not Burbank. Its people approved a $5,565,000 bond issue in 1955. This year Mayor Earle William Burke, Manager Harmon R. Bennett, and the City Council have told citizens what's been done with that money to date.

The story develops through "CAP," a mischievous cartoon figure. "CAP," clutching a cake with five lighted candles on it, introduces the 16-page, tabloid-size, newspaper report. It covers public works improvements for five years and city operations for the last fiscal year.



"Cap" reports on Burbank's improvement program.

The symbolism of the cartoon boy goes deeper than mere personification of the current improvements. The report says: " 'CAP' represents our city's thousands of youngsters, the future generations who will benefit for many years to come from the progressive thinking and planning of Burbank's citizens of today." ◄

Sample materials, described in this article, are available in limited quantity from the mayor of the city concerned. Mayors are usually glad to share good public relations ideas with fellow city officials. Write to them, directly, at their city halls.

Plymouth Municipal Department Heads Hold More Frequent Meetings

Plymouth, Mich., now holds department-head meetings twice a month, on the Friday prior to commission meetings. In the past, such meetings were held occasionally, perhaps once each month. However, City Manager A. F. Glassford has found that these meetings play an important role in ensuring a smoothly operating municipal administration. Scheduling meetings on a regular basis enables department heads to come prepared and expedites discussion and decisions.

Those attending the meetings include the Director of Public Safety, the Superintendent of Public Works, the Treasurer-Assessor, the City Clerk-Accountant, the Supervisor of Planning and Engineering, the Building Inspector, the Administrative Assistant and the Manager. ◄

SAFEWA
TENNANT
TENNANT
100

DRAMATICALLY CLEAN sweeping with Tennant "100" reduces complaints, attracts public interest.

How to give your city an EXTRA-CLEAN name

From Maine to California, progressive cities take pride in the *cleanliness* of their downtown areas—as these are their public "showcases".

It is here—where extra-clean sweeping counts most—that you will find enthusiastic interest in TENNANT's revolutionary *vacuumized sweeping.*

You'll see the difference at once, because a TENNANT Model "100" Vacuumized Sweeper provides *ultra-clean sweeping . . . with no dust nuisance at all!* For performance, the new "100" is in a class by itself.

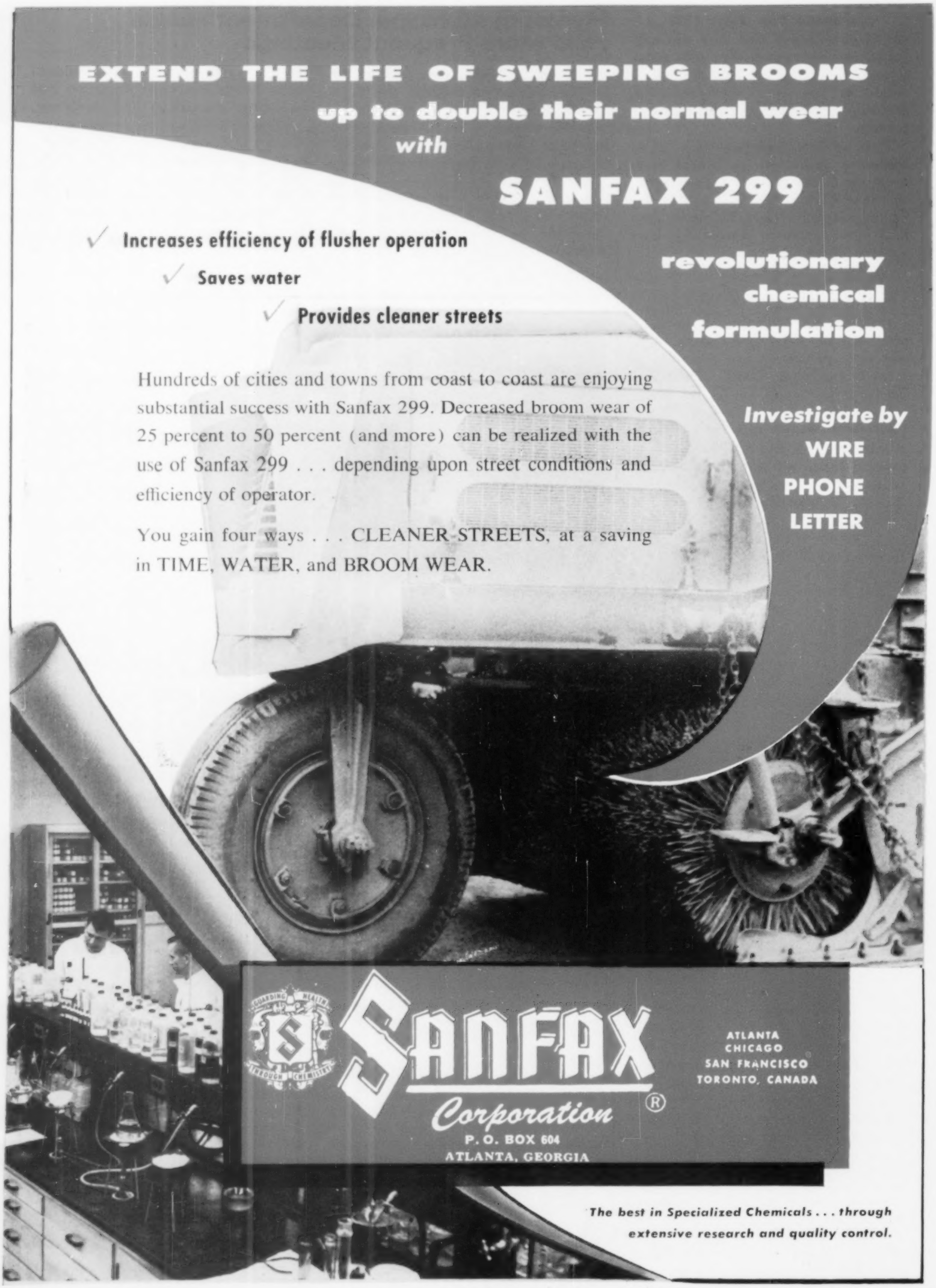
Its powerful brush-and-vacuum system picks up the fine dust that's usually missed . . . as well as heavy, bulky debris. It cleans a 7'4" path.

You'll find it trimly compact, highly maneuverable. Assures outstanding results in downtown areas, dusty alleys, parking lots . . . as well as in attractive residential areas.

WRITE TODAY *for illustrated bulletins, photos and performance data. G. H. Tennant Co., 751E N. Lilac Drive, Minneapolis 22, Minnesota.*

OUR 90th YEAR
TENNANT

VACUUMIZED SWEEPERS



EXTEND THE LIFE OF SWEEPING BROOMS

up to double their normal wear

with

SANFAX 299

- ✓ **Increases efficiency of flusher operation**
- ✓ **Saves water**
- ✓ **Provides cleaner streets**

revolutionary chemical formulation

Hundreds of cities and towns from coast to coast are enjoying substantial success with Sanfax 299. Decreased broom wear of 25 percent to 50 percent (and more) can be realized with the use of Sanfax 299 . . . depending upon street conditions and efficiency of operator.

You gain four ways . . . CLEANER STREETS, at a saving in TIME, WATER, and BROOM WEAR.

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The best in Specialized Chemicals . . . through extensive research and quality control.

No More Nose Holding Here

The plague of sludge odors emanating from the chimney of the Allegheny County Sanitary Authority's new Pittsburgh Sewage Treatment plant is over. Four weeks of operation at full-load capacity, during which time many tests were made to determine the source and type of odors emanating from the chimney, proved the success of the changeover program. During this time all tests for sludge odors were negative. This is a tribute to Combustion Engineering, Inc., contractor and manufacturer of the sludge incinerators, which met the challenge and produced a furnace that now is absolutely free of sludge odors under all operating conditions.

We closed down the four incinerators late last October after operating for about six months; during those six months sludge odor was a problem. While we were shut down, the contractor studied the units thoroughly. The studies revealed obvious short-circuiting of the odorous drying vapors into the preheater tubes leading to the chimney before there was sufficient contact with the flames and hot gases in the furnace itself to accomplish oxidation. Combustion air was also short-circuiting into the drying vapor sections of the preheater chamber; this provided combustion air at the wrong place and left the coal burners gasping for air. The water-filled ash hopper in the bottom of the furnace was the source of extensive vaporization which served no purpose. Finally, we found the tops of the preheaters filled with almost two feet of fly ash.

Changes Made

Several changes were made. First, the contractor cut four 2 x 5-foot ports through the target wall to reroute the malodorous vapors directly into the furnace. Closing off the opening in the bottom plate of the preheater chamber made impossible the discharge of gases behind the baffle wall as originally designed. A pad of No. 3000 cement poured over the plate separator between the combustion-air section and the vapor-return section closed off the annular spaces around each of the 1,700 preheater tubes, thereby preventing short-circuiting of combustion air into the preheater chamber.

Additional changes included the installation of soot blowers in the chamber at the top of the preheater and lowering the water level in the ash pit about 18 inchs to reduce vaporization.

During the entire test period, the volume of concentrated sludge delivered to the incinerators averaged 19% solids.

The first furnace rehabilitated went into continuous operation on the first of February and during the period of testing was in action five days a week at full-load capacity.

As previously mentioned, many tests were made, even flying over the plant with a helicopter in order to pass through the smoke plume at the top of the chimney. This we did on several occasions but not once did we observe sludge odors even at this point.

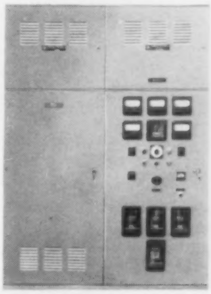
Now that the changes have proven to be successful, Combustion Engineering is proceeding to make the necessary corrections in the remaining three incinerators.

J. F. Laboon
Executive Director
Allegheny County Sanitary Authority
Pittsburgh, Pa.

because
PERFORMANCE
counts

Inspecting new unit are
J. W. Swartz, Superintendent, W. J. Lynott,
Consulting Engineer, and W. H. Grady, Artesian Equipment Company

The Hackensack Water Company, Hackensack, New Jersey, like many users of IDEAL equipment, again selects IDEAL equipment on the basis of proven performance.



A new 2000 HP, 720 RPM synchronous motor with control shown at left, duplicates an Ideal unit that has been in operation since 1954.

There are good reasons why progressive commercial and municipal water suppliers—and others who require the utmost in performance and dependability – repeatedly choose Ideal equipment.

For complete details write for bulletin 501

The
IDEAL ELECTRIC
& MANUFACTURING CO.
370 East First St. Mansfield, Ohio

SINCE 1903, AMERICA'S FINEST MOTORS, GENERATORS,
MOTOR-GENERATOR SETS, SWITCHGEAR AND CONTROLS

How to Study Metropolitan Needs

It is fundamental to the success of any metropolitan plan that the various governmental units involved must work together for the common economic good. I offer ten guides to any area studying its economic needs.

1. Investigate all solutions carefully, then determine your own needs and methods, based on your own ingenuity. There is no one plan that is good everywhere for there is no uniform solution for metropolitan problems.

2. Hold out for a comprehensive plan; do not settle for a piecemeal substitute unless it is only an interim step that can be broadened later.

3. Do not limit your boundaries to one county when you know that the present or potential metropolitan area is greater.

4. Measure effectiveness proposed against non-monetary rights, such as local autonomy and expression of local interests.

5. See if decision-making ability is removed from your people, thereby risking loss of their civic responsibility.

6. See if the proposed governing board can remain responsive to the people.

7. See if it spells out a clear-cut set of governmental duties to be performed area-wide, thereby avoiding future intra-area jurisdictional disputes.

8. Whatever your area's plan for action is, base it upon economic and social as well as political goals, and base it upon cooperative, concerted, self-disciplined joint action of all the forces in your community area.

9. Whatever plan you adopt, give it adequate financial ability to match the job you give it to do.

10. Whatever plan you adopt, keep it current, and keep it abreast of the growth and development of your area.

John J. Sheridan
City Councilman
Richmond, Calif.

Editor's Note: Councilman Sheridan expressed these ten points at a recent Japanese-American Conference in Osaka, Japan.

For beautifully clean cities
PUSH
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STANDARD

Superior Waste Receptacles

Handsome Superior receptacles invite citizen cooperation in your clean-up campaigns, encourage neat waste disposal indoors and outdoors. Sturdy construction and long service life keep maintenance costs to a minimum.

***WEATHERMASTER**

- Rainproof flaps swing in, operate independently. (No springs)
- 4 models to fit every requirement—available with advertising panels.
- Handsome styling—choice of colors.

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with stainless steel dome top—opens in any direction. Ideal for corner or against wall locations.

STANDARD Models

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- Steel legs.
- 7 sizes.
- Green, white or grey immediately available. Other colors on order.

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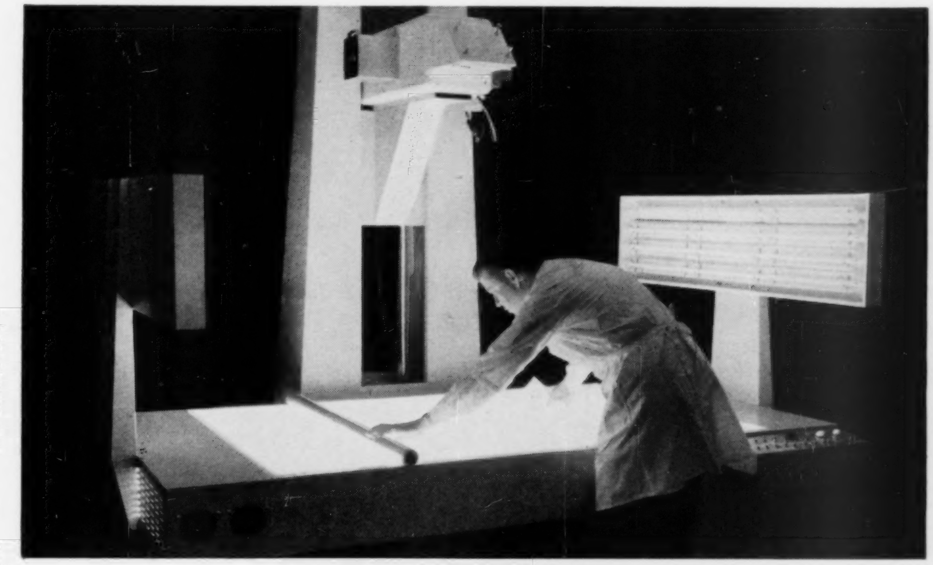
WIRE CRATES for paper and glass bottles • DISPENSER CANS • MILK CANS
ICE CREAM CANS • HARDENING BASKETS • HOODED and OPEN PAILS
STRAINERS Metalware for the Dairy Industry and Waste Receptacles

QUALITY PRODUCTS JOHN WOOD SINCE 1867

Civil Defense Rescue Teams Are Valuable

The Civil Defense organization at Culver City, Calif., proved its worth recently in a natural gas explosion which demolished three apartment houses. City employees, the local gas company, and the American Red Cross responded immediately, bringing the situation under control. All city workers were commended for their prompt and efficient action under emergency conditions, with particular praise going to the Civil Defense Rescue Squad. The latter group is composed of 27 city employees specially trained in disaster procedures. They include heavy-equipment operators, mechanics, electricians, truck drivers, and even two deep-sea divers. The 27-man squad received its training under Civil Defense sponsorship. Their accomplishments under fire and as auxiliary to the Culver City Fire and Police Departments have proved of such value that the city is taking steps to enlarge the Rescue Squad and provide additional training. Such additional training will cost the city only 50% of its actual value under the OCDM "Matching Funds" program. ◄◄

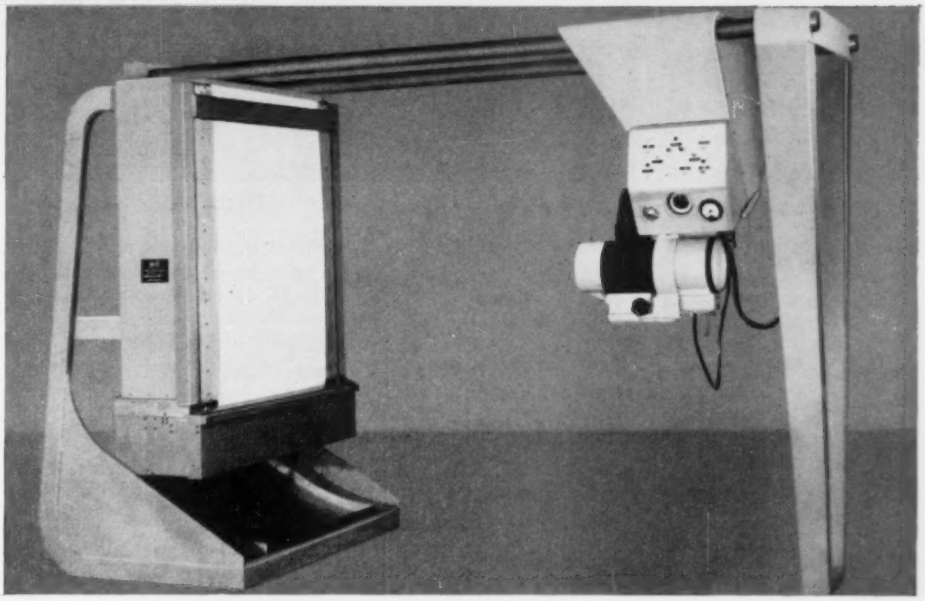


MICRO-MASTER®
105/35mm
Camera-Projector

A new K&E exclusive combines the two important miniaturization systems—105mm and 35mm—in a single, compact unit, permits tailoring of reproduction to the exact requirements of each job. Camera and projector are combined in a single overhead assembly with interchangeable magazines. Operator can shift from camera to projector, 105mm to 35mm, roll to sheet film, black and white to color . . . in seconds!

KECOFAX®
105/35mm
Projector-Printer

Now, for the first time, a unit that produces sharp, permanent, *work-size* electrostatic prints up to 34″ x 48″. From exposure to print in *40 seconds.* Delivers as many as 19 prints automatically. Process completely eliminates wet processing. Direct exposure onto electrically charged paper forms a latent electrostatic image by dissipating charges in the light struck areas . . . passage through toning and fusing chambers forms and permanently fixes a visible image.



2 Dynamic New Developments in Miniaturization of Engineering Drawings

Maximum performance and flexibility are yours in these new K&E units . . .

Miniaturization takes on a new dimension with the introduction of these two new K&E units—the basic components of a complete reproduction system engineered by K&E to provide maximum speed, accuracy and *flexibility* in miniaturization of engineering drawings.

For use in conjunction with your present equipment, or as the foundation of a complete new system, the MICRO-MASTER 105/35mm Camera-Projector and KECOFAX Projector-Printer working together provide both 105 and 35mm negatives and all sizes of prints required from full-size to any reduced size. Incorporating dozens of outstanding engineering firsts, these units represent an entirely new concept in effortless, *full-range* miniaturization . . .

For further details on these new K&E units, and the complete line of MICRO-MASTER and KECOFAX miniaturization equipment, send us the coupon to the right.

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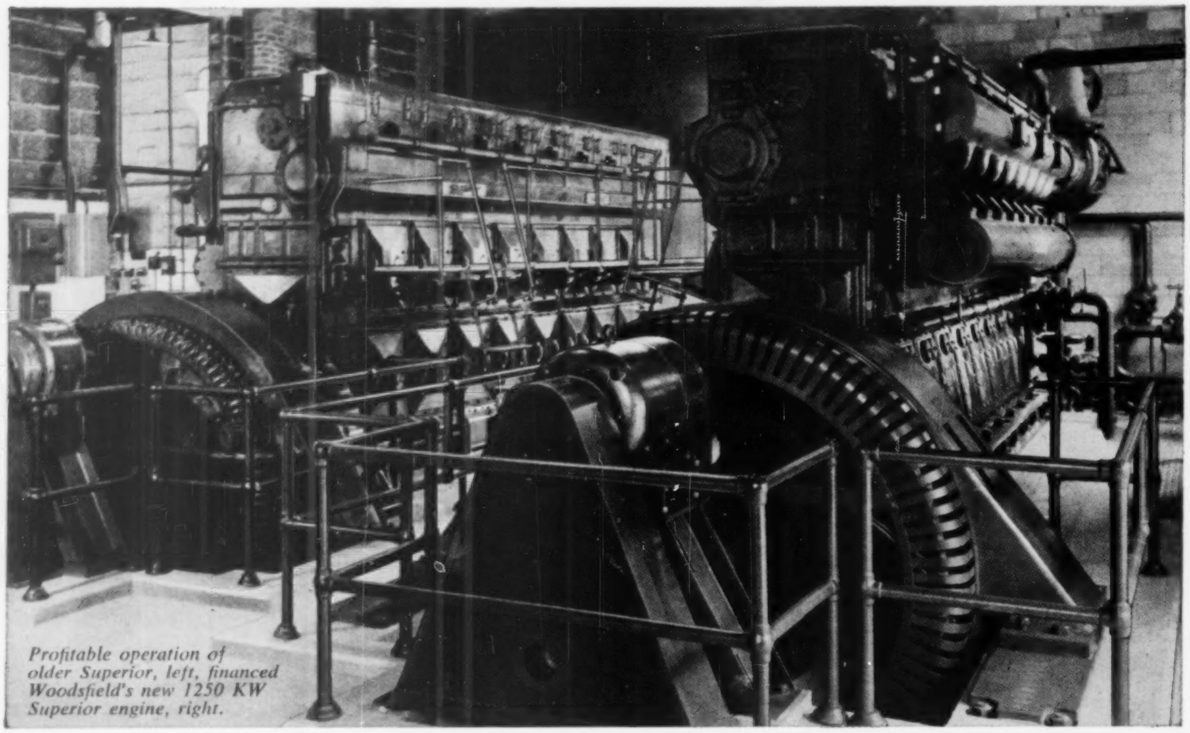


Profitable operation of older Superior, left, financed Woodsfield's new 1250 KW Superior engine, right.

80-GDS-8 runs 44,000 hours without overhaul, cuts fuel cost 50%, pays for second diesel!

Superior engines power Woodsfield's boom!

Olin Mathieson's new aluminum plant on the Ohio River, 18 miles from Woodsfield, caused the town to grow more during 1957-59 than in the previous 25 years combined! Power consumption soared from 2,921,740 KW in 1956 to 4,167,260 KW in 1958, as acres of new worker homes hit the line.

But economy-minded city fathers and maintenance-conscious power plant personnel met the crisis, aided by two Superior engines. The first, an 80-GDS-8 dual-fuel of 600 KW capacity, entered service in 1950. During the next 7 years, it reduced costs per KWH 50% as compared to Woodsfield's 3 older straight diesels. After 44,000 hours operation, it was overhauled in 1958. The only replacements needed were connecting rod bearings. Piston rings were replaced, too, although their .002″ wear was well within tolerances.

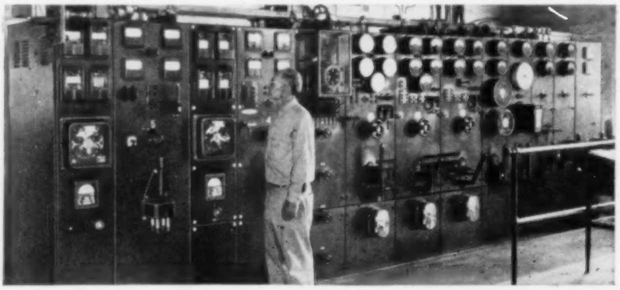
This Superior did more than supply consumers with low-cost electricity. Power profits also financed various municipal improvements, including a second Superior engine-generator! The new 80-GDSX-8 supercharged dual-fuel of 1250 KW capacity commenced operation in early 1958. In addition to maintaining low fuel costs, it operates more than 50,000 horsepower-hours per gallon of lube oil!

For every municipal need, White Superior offers economical diesel, dual-fuel, or gas engines ranging from 190 to 2150 HP, or 150 to 1500 KW!

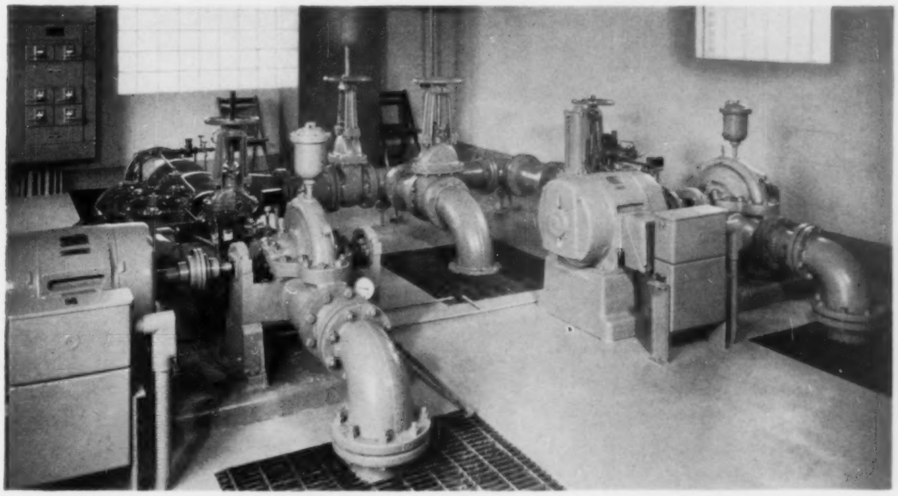
Superior ENGINES · ATLAS Imperial DIESEL ENGINES · White DIESEL

White Diesel

WHITE DIESEL ENGINE DIVISION
THE WHITE MOTOR COMPANY
Plant and General Offices: Springfield, Ohio



L. W. Marple, plant superintendent, checks controls of town's five power-producing engines.



The pumps and valves at this booster station operate automatically in accordance with demand.

Water Pressure Drop Was the Problem

. . . but Geneva, N. Y., solved it with new mains and booster station

By **T. V. BALDWIN***
City Engineer

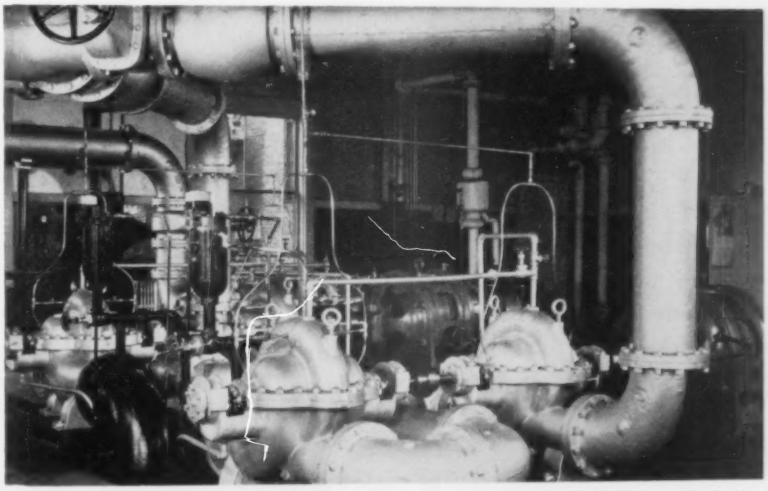
A series of static pressure readings at 157 points in the Geneva, N. Y., water-distribution system indicated the need for more water in the west and north sections. Pipe friction or elevation difference, or a combination of the two, caused the trouble. Our tests showed that the static head difference between the high and low point of the system was 61 psi. To alleviate this condition, we decided to increase the supply of water to the top of the system. One indication of the program's success is the reduction of static head differential to 28 psi.

A pumping station at Seneca Lake level delivers water to the system and to a 6,000,000-gallon reservoir through a 20-inch line. The station has two 3,000-gpm Goulds pumps operating against a 330-foot head; the reservoir is located approximately 300 feet above the center line of the pumps.

Our studies showed that neither the pumps or reservoir could alleviate the low-pressure condition even though larger mains were installed; an automatically controlled booster station would be better than an elevated tank and pumps to fill it.

A 14-inch line taps the 20-inch feed line at the point of entry to the storage reservoir. This line conveys the water 3,400 feet to the booster station. From this point a 12-inch discharge line then carries water the additional 2,890 feet to a new ten-inch line, which in turn is tied into an eight-inch and a six-inch line, both existing mains. Two other connections to the system consist of six-inch take-offs located approximately 500 feet and 1,780 feet from the booster station. Pressure regulators located in pits at the two take-off points reduce pressure from that existing in the 12-inch line (approximately 80

(Continued on page 183)



These two-stage units pump water into Geneva's distribution system and six-million-gallon reservoir located 300 feet above the pumps.

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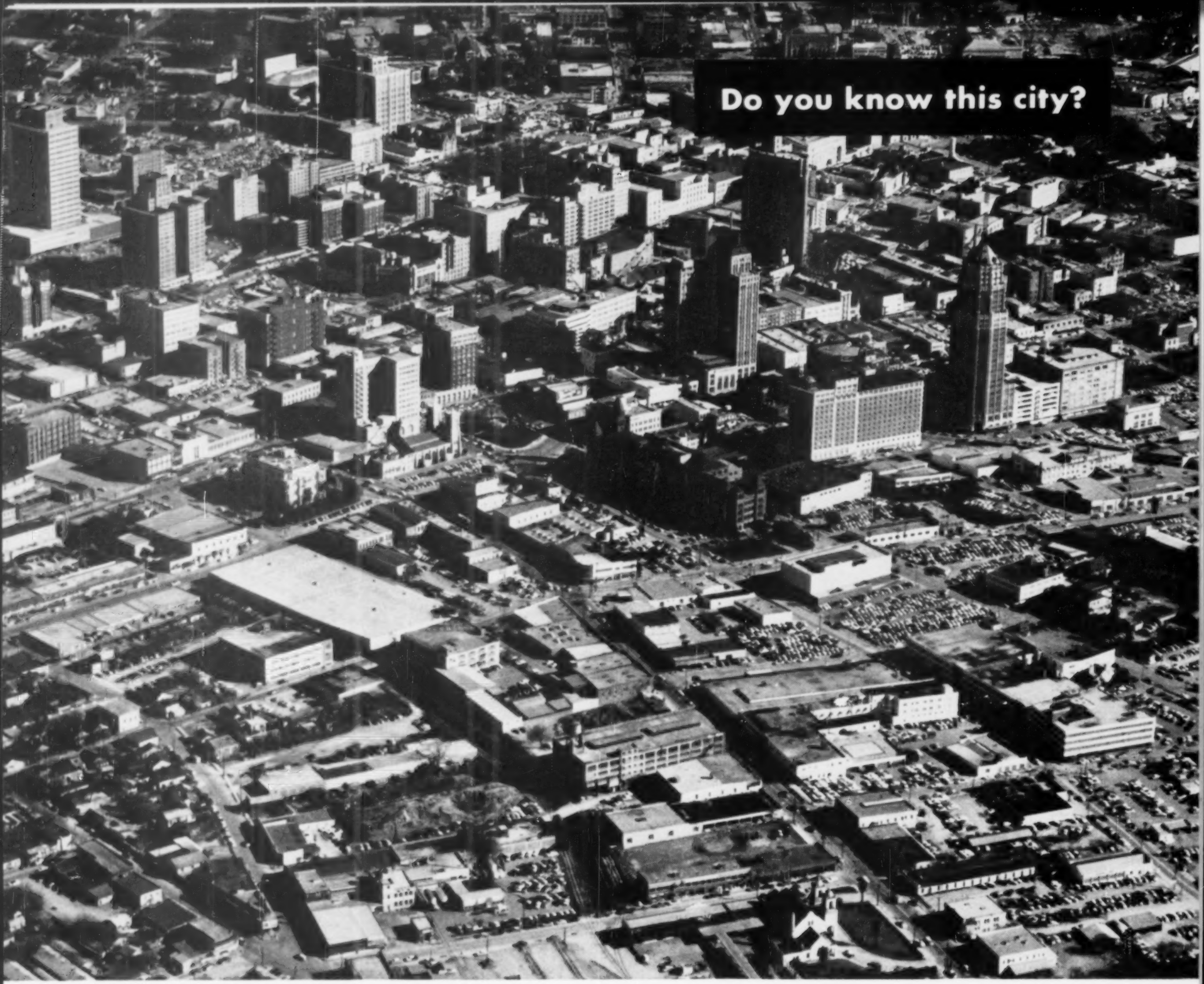
* Mr. Baldwin designed the water improvements for the City of Geneva as a consulting engineer, before accepting his present position as City Engineer for Geneva.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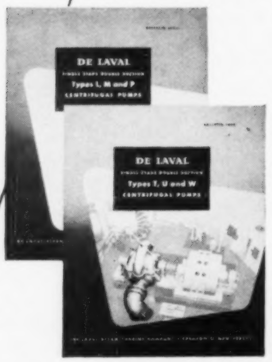
DE LAVAL *water works pumps*

serve the citizens of...

San Antonio . . . city of Alamo fame, growing to meet the demands of its dynamic citizens and economy. Here, De Laval water works pumps have been providing vital water requirements with increasing reliability—as they have in most major American cities for over half a century. De Laval makes water works pumps with capacities ranging up to 100 million gallons per day to meet all water works requirements.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CENTRIFUGAL PUMPS

Write for your copies of
De Laval Bulletins 1004 and 1005
giving data on these pumps.

DE LAVAL *Centrifugal Pumps*

DE LAVAL STEAM TURBINE COMPANY
866 *Nottingham Way, Trenton 2, New Jersey*

(Continued from page 181)

psi) to 62 psi and 65 psi respectively.

The second take-off line connects into two existing six-inch mains some 3,125 feet from the take-off point. The profile indicates a pick-up of 15 psi above the regulated 65 psi at the point of connection to the existing mains.

To strengthen the system further, new lines were laid parallel to existing mains and tied into the system at various points. The main work consisted of laying about 15,300 feet of pipe ranging from 6 inches to 14 inches in diameter.

Booster pumping equipment consists of two 4x6-inch single stage Goulds pumps powered by 50-hp General Electric motors. Both have ratings of 800 gpm against a total head of 151 feet. Since incoming pressure on the suction side was 40 psi instead of the anticipated 20 psi, we picked up capacity and therefore cut the impellers from 13⅝ inches to 12¼ inches.

Two Allis-Chalmers six-inch Roto Valves, actuated by Cash Company hydraulic positioners, control the water entering the system and act as check valves. Healy-Ruff pressure controllers start and stop the pumps as needed.

Under normal conditions, one pump operates continuously with the second unit coming on the line as needed. Maximum output, with both pumps running, is about 1,800 gpm. The point of connection of the 14-inch suction line and the 20-inch transmission line at the reservoir lets water be taken from the main pumps in series with the main plant or from the reservoir.

At the end of the ten-inch discharge line where it tied into a six-inch line and an eight-inch line more than 3,000 feet from the booster station, we raised the static pressure from 28 psi to 74 psi. A hydrant here formerly had a pressure of only 7 psi; now it is 54 psi.

A fire-hydrant flow test made in an industrial area in which we ran a six-inch line parallel to an existing line and tied it to a new eight-inch line to eliminate a dead end, showed a flow of 680 gpm with 45 psi residual pressure before the work and 1,040 gpm with 74 psi residual pressure after the work was completed.

Alvin Blair Company of Rochester, N. Y., was the successful bidder on the project at $169,439. Of 11 bids received, seven were within $2,000 of each other. Financing was by a bond issue later converted into short term notes. ◄◄

Pennsylvania Associations to Establish Local Government Center

A group of Pennsylvania local government associations will establish a Local Government Center at 2415 North Front Street, Harrisburg.

The Center will serve as headquarters for most of the local government associations of the Commonwealth. As presently planned it will house the staffs of the Boroughs Association, the League of Cities, and the Municipal Authorities Association. In addition, it will serve as state headquarters for other organizations, including the Pennsylvania Local Governmental Secretaries Association, the Pennsylvania Municipal Utilities Association, and the Municipal Assessors Association of Pennsylvania.

A number of other organizations may make use of the Center. ◄◄

NEW . . . M & M BEAVER BRUSH CHIPPER

M&M
BEAVER
AMERICA'S NO. 1 BRUSH CHIPPER
the only brush chipper that produces large or small chips
MITTS & MERRILL, SAGINAW, MICHIGAN
BUILDERS OF SPECIAL MACHINERY SINCE 1854

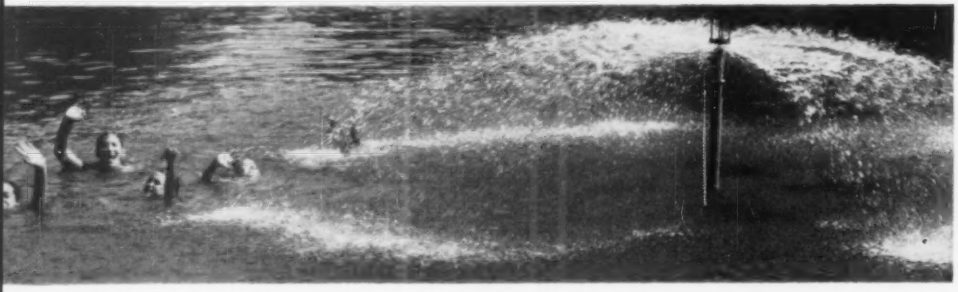
Write today for closest dealer and catalog No. 657 which gives the facts and exclusive features on all six new models of M & M Brush Chippers. See . . . Compare . . . Buy an M & M Beaver, America's No. 1 Brush Chipper. ***Dealer Inquiries Invited.***

103

MITTS & MERRILL • 1003 So. Water Street • SAGINAW, MICHIGAN

BUILDERS OF WORK-SAVING, MONEY-SAVING AND MATERIAL RECLAIMING MACHINERY SINCE 1854

The Wyckoff YMCA pool resembles the "old swimming hole"—but without the danger of polluted water. The pipe in the background was reused when the recirculation system was placed underwater.



The adjustable spray head, although used primarily for aeration, provides a steady shower which the children can play beneath.

"The Old Swimming Hole"

. . . in Wyckoff, N. J., keeps its historic charm, gets sanitary protection

Children in the Wyckoff, N. J., area enjoy swimming in an "old swimming hole" that will awaken nostalgic memories in their fathers. At the same time, the pool has a sanitary purity that the old-time swimming spots rarely had. The pool takes advantage of the natural contour of the area, utilizing an old dam and a drainage stream running through the site.

The idea of building the pool came with the acquisition of the property by the Wyckoff YMCA. The dam, which was no longer used, was patched up and is presently the deep end of the pool. In constructing the pool, it was first necessary to bypass the stream by digging a trench through what is now the beach area and installing about 250 feet of 36-inch concrete pipe. This pipeline now carries the drainage water around the dam. The trench was then filled for use as a beach.

Pool construction consisted of grading down to bed rock in some areas and clay in others, utilizing a power drag line and a great deal of hand labor. About 250 yards of washed yellow sand was then placed over the pool bottom and 80 yards of washed white sand on the beach. Most of this was done by volunteer hand labor.

The rocks and mud removed from the pool went into construction of a second dam located at the brook or diversion end. The pool measures approximately 50 feet by 160 feet with a center depth of about 9 feet.

The aeration and recirculating system utilizes lightweight Ace Supplex flexible polyethylene plastic pipe, and Ace-Ite rigid plastic pipe, both NSF-approved.

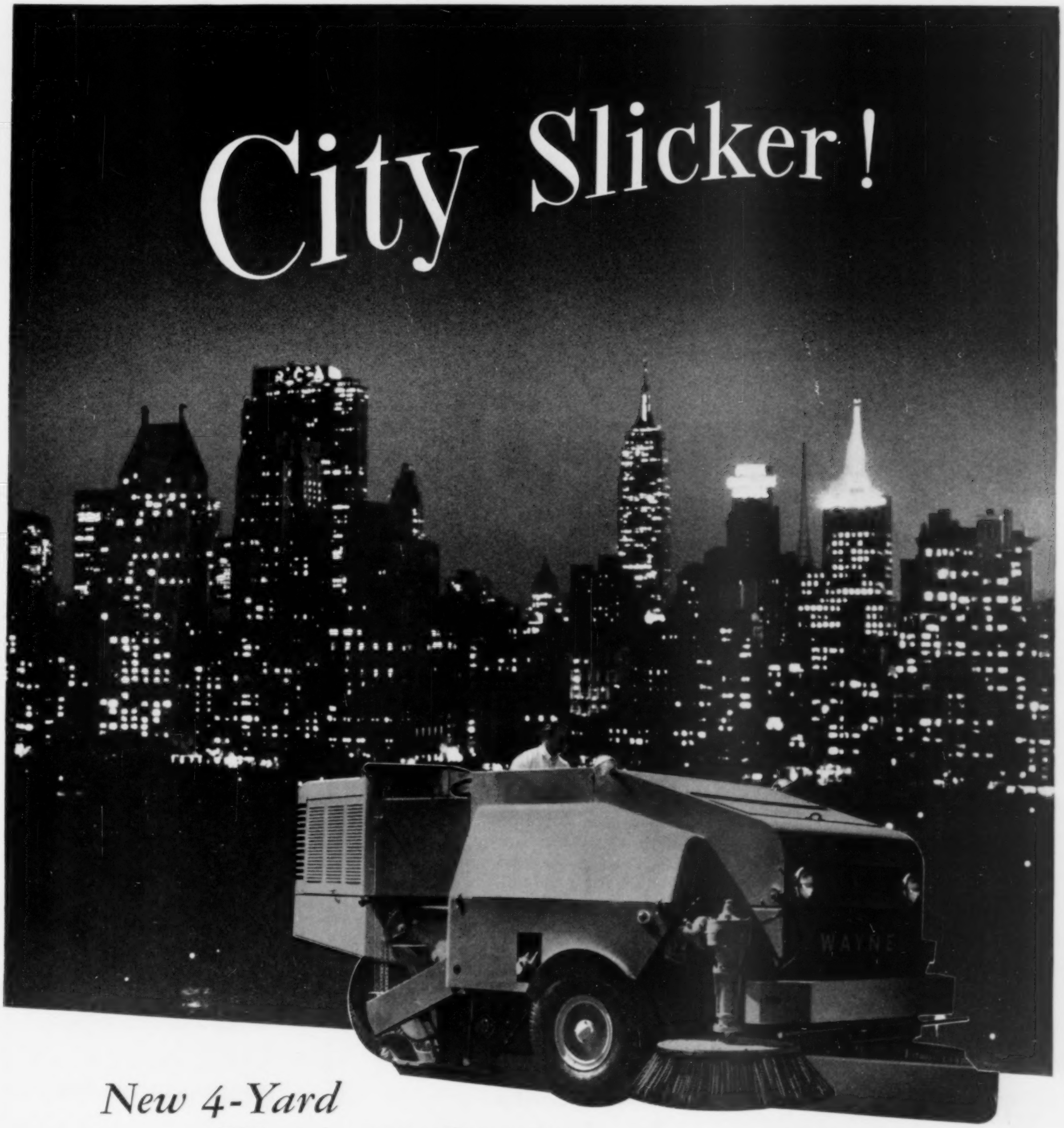
Originally the system consisted of an adjustable hard-rubber spray head in the center of the pool, and a spray pipe along the rear bank of the pool, both fed by one pump. The central spray-head was mounted on a 2″ vertical pipe of rigid Ace-Ite set in a concrete base. This upright was connected to the pump by 2″ flexible Supplex pipe laid across the bottom of the pool.

The shore spray was constructed simply by running a 2″ Supplex flexible polyethylene pipe along the rear bank for about 100 feet, reducing it to 1½″ pipe for another 80 feet, and finally drilling 120 ⅛″ holes in the line. The amount of water flowing through this shore system depended upon the setting of the central spray head.

The inlet system for the pump consists of a 4″ rigid Ace-Ite pipe leading from one corner of the pool to the pump. This was equipped with a filter at the pool end to prevent sand, etc., from entering the system.

Rate of flow through the system amounted to about 520 gpm. In ad-

(Continued on page 186)



New 4-Yard Wayne 520 Sweeper

To slick up your streets at a saving—regardless of your city's size—here are *all* the advantages of big sweeper performance in a single machine . . . the new Wayne 520 Sweeper! You get the extra capacity of a 4 cubic yard machine, the extra hours of on-the-job sweeping, and the extra economies of a one-man street cleaning department with this big new Wayne!

There is nothing to match it on the market today. The 520 has the rugged power and stamina for the toughest sweeping schedules . . . 3-wheel maneuverability . . . full 4 cubic yard hopper capacity . . . and over-all construction features that make a Wayne the most dependable sweeper you can buy.

The new Wayne 520 couples maximum *capacity* to maximum *economy*, puts big sweeper clean-ability within reach of every city. Before *you* invest—*check* the facts with Wayne. *Write for literature—today!*

WAYNE Manufacturing Co.
2347 East Lexington Street
Pomona, California

Send me a copy of your Sweeper brochure

Name________________________

____

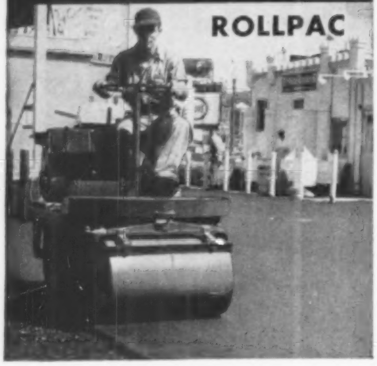
Attach to company letterhead and mail

WAYNE MANUFACTURING CO.

POMONA • CHICAGO • NEWARK Export: Henry R. Jahn & Sons, Inc., New York City

YOU CAN'T OUTGROW A ROLCOR ROLLER

STATIC OR VIBRATORY



Whether your job is . . .

Crease rolling . . . Driveways . . . Parking lots . . . Patching . . . Tennis courts . . . Sod rolling . . . Maintenance . . . you won't outgrow the usefulness of a Rollpac.

That's why thousands of contractors, landscapers, institutions and others make Rollpac their "number one" unit. One week on *your* job will prove to you why Rollpac is the top selling one-ton roller in the United States.

Here's a two-ton vibratory roller that produces compaction to equal or exceed static rollers weighing eight tons! Vibrapac is 100% American designed and built specifically for asphalt and soil compaction—no corrugation of surfaces. A single lever clutch shifts from static to vibratory action. Works in close places.

Easy to transport with Rolcor Trailer.

WRITE FOR FULL INFORMATION AND LITERATURE

ROSCO MANUFACTURING CO.
ROLCOR DIVISION
3118 Snelling Ave. • Minneapolis 6, Minn.

(Continued from page 184)

dition, another 80 gpm of fresh water entered the pool from a well at one end of the pool. Excess water flowed over the spillway at the old dam.

Chlorine was added in the form of hypochlorite pellets every 24 hours. This combination of aeration, chlorination and addition of fresh water insured a sanitary pool at all times.

The aeration system was installed in eight hours. Material costs for plastic pipe was less than $275.

Pool Enlarged

At the end of the first year of use (1958), the pool was enlarged from 400,000 gallons to about 500,000 gallons capacity. This necessitated removing the shore line spray system. However, most of the pipe was reused.

The new underwater chlorination and distribution system consists of a header of four-inch, three-inch and two-inch rigid plastic pipe with 20- to 35-foot-long polyethylene distributor legs which were made from the old shore spray legs. A chlorinator was added to the pump house and the same pump is used to distribute about 60 pounds of chlorine per day maximum with a 520-gpm stream of water carrying the chlorine. The 12 laterals contain about 300 one-eighth-inch holes spaced at one-inch intervals. Although the fountain-like effect of the original shore spray is no longer present for the swimmers' enjoyment, the pipe is still in use as part of the new underwater system.

Besides ease of installation, the plastic pipe offers advantages such as immunity to rot, corrosion, and mildew, and requires virtually no maintenance. ◄◄

Fire Engines For Posterity

Two 1928 American - LaFrance pumping engines have been turned over to the Phoenix, Ariz., Parks and Recreation Department to be saved as museum pieces. In the past when fire engines became useless to the Fire Department they were offered for sale and brought only small amounts. Under the new policy such items will be turned over to the Parks and Recreation Department, who eventually will establish a suitable display so that years from now the citizens of Phoenix can compare the equipment they are using with what their forefathers used. ◄◄

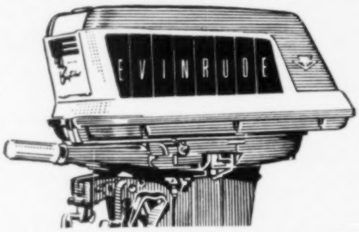
work boat POWER!

Got a tough boating job? Here's the motor that takes it in stride—Evinrude's 1960 Big Twin! 40 horsepower at 4500 rpm. Big-load power that loves to work. It's as easy to pull over and start as most motors half its size—and thermostatic temperature control keeps it running at peak efficiency in any weather, on any water. Choice of props to fit boat and work. For constant, rugged duty, there's no finer outboard power—or more economical buy—than the stout-hearted Big Twin.

See your Evinrude dealer

EVINRUDE MOTORS • 4143 N. 27th St.
Milwaukee 16, Wisconsin
A Division of Outboard Marine Corporation
In Canada: Mfd. by Evinrude Motors, Peterborough

EVINRUDE
FIRST IN OUTBOARDS



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Registered Engineer
and
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PLAN *Low-Cost* BRUSH DISPOSAL–

PLAN ON A FITCHBURG CHIPPER

The exclusive Spring-Activated Feed Plate of the Fitchburg Chipper assures smooth, efficient, SAFE operation. This built-in engineering development, which makes trouble-free operation possible, has been patented.

FAST . . . ECONOMICAL . . .

. . . SAFE

Plan on *low-cost* disposal of trimmed branches, whether it's for a tree company, utility, highway department, a city, or a park department—plan on getting a Fitchburg Chipper.

This well-engineered and rugged machine turns brush into easy-to-dispose-of chips, at very low cost. Only the Fitchburg Chipper has an exclusive, patented Feed Plate which automatically adjusts for any size brush up to its rated capacity, making it possible to chip large or small material with ease.

This Spring-Activated Feed Plate reduces shock action and horsepower requirements since it permits chipping of larger size wood without extra power. The Feed Plate results in fast, efficient chipping without a heavy, cumbersome fly wheel. The smoother chipping action means lower maintenance, too, as well as greater crew safety.

This safety feature is important. "Because of the feed plate with its safety spring the men can't get hurt by any backthrow from the Chipper," explains the Superintendent, The Park and Shade Tree Commissions, Bridgeton, New Jersey.

Please send in the coupon for more information, and for copies of articles on chipping which appeared recently in leading publications. These feature articles describe five methods of brush disposal, and ten new ways to utilize "by-product" chips. Send for your copies, they are well worthwhile.

FITCHBURG ENGINEERING CORPORATION FITCHBURG, MASS.

FITCHBURG ENGINEERING CORPORATION

Dept. AC-65
Fitchburg, Massachusetts

☐ Please send me important articles which describe 5 methods of brush disposal and 10 new ways to utilize brush chips.

☐ Please send more information on Fitchburg Chippers.

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Address____________________

City____________________ Zone_____

State____________________

What Every WATER SUPERINTENDENT Should Know About

AMERICAN METERS

Full Interchangeability of Parts

You can order a part for an American Meter that is 20 . . . 30 . . . yes, 40 years old and it will fall into place — a perfect fit.

Full interchangeability of **parts** in American Meters eliminates the need to purchase costly "unit-assemblies". You replace the individual worn parts and nothing more. This means lower parts costs, lower inventory costs, lower repair costs.

Such interchangeability is achieved by precision manufacture and the finest quality control. It is possible, too, because American Meters are simple and uncomplicated. They have the fewest moving parts of any complete meter. This means more rugged parts for longer, more trouble free service.

Read about this and other features of American Meters in Bulletin 58. A copy will be mailed to you on request.

BUFFALO METER COMPANY
INCORPORATED

2902 **Main Street** **Buffalo 14, New York**

Soluble Iron

(Continued from page 124)

with 5 ppm of iron, 100 ppm of carbon dioxide and a pH of 5.5. In order to increase the pH to 7 without increasing hardness (by lime) it would be necessary to add 72 ppm of caustic soda which at 5.5 cents per pound would be equivalent to 3.6 cents per 1,000 gallons of water. This cost is considerably more than the cost of permanganate for iron removal. The pH could be raised by aeration, although if aeration is required, it may be simpler to remove the iron by ordinary filtration with or without sedimentation.

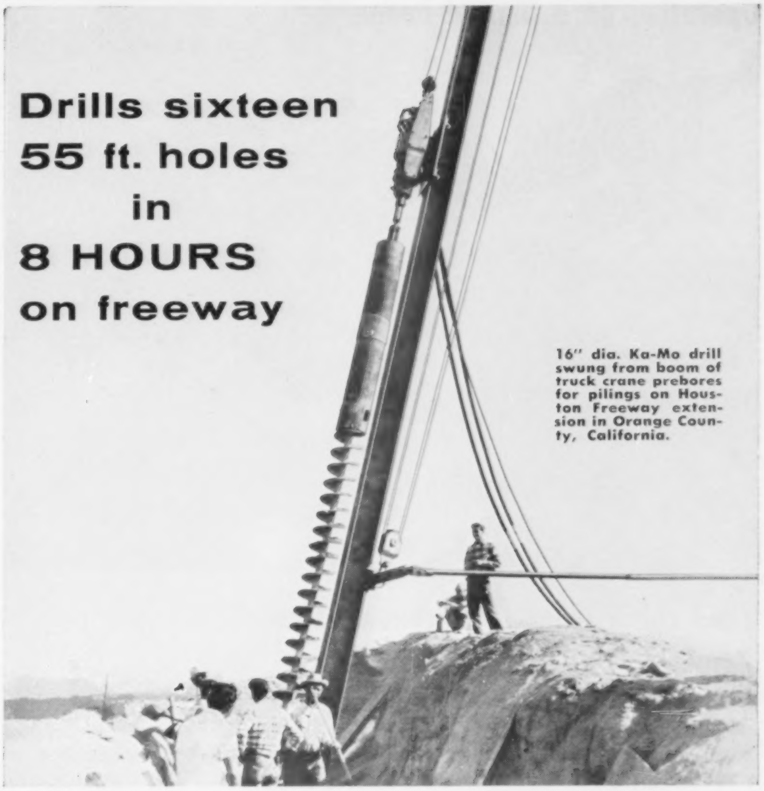
Aeration Methods

The oxidation of ferrous to ferric iron and precipitation occurs best at pH ranges between 7 and 9. Aeration of most waters will increase the pH by driving off the carbon dioxide normally present. However, some waters have a very low natural alkalinity but a high iron content. In these cases, aeration will reduce the pH even possibly to the point of free mineral acidity (pH 4.3 or below), making it necessary to feed an alkaline material (caustic soda, soda ash, lime) to elevate the pH to between 7 and 9. It requires five parts of air to oxidize seven parts of iron, although generally a considerable amount of excess air is used.

The two general methods of aeration are pressure aeration and open aeration. Pressure aeration consists of forcing air under pressure into the water also under pressure with provision for release of the excess air. This type of aeration is accomplished by air diffusers placed in the water stream or by air grids in a pressure vessel containing the water. Pressure aeration is usually directly followed by filtration. For this reason, pressure aeration is usually limited to waters with iron concentrations which are not excessive in order to prevent the imposition of excessive loads on the filters. The advantage of pressure aeration is the elimination of the necessity for re-pumping.

Open aeration consists of blowing air into the bottom of a tank of water through diffuser plates or grids, passing water downward through a coke tray or wood slat aerator relying on natural air circulation, or passing water downward through a wood stave or cascade type aerator counter-flow to a forced or induced current of air.

(Continued on page 190)



Drills sixteen 55 ft. holes in 8 HOURS on freeway

16" dia. Ka-Mo drill swung from boom of truck crane prebores for pilings on Houston Freeway extension in Orange County, California.

Ka-Mo 16" drill sets record pace preboring for pilings on Houston Freeway

Bertran Drilling Co., contracted to prebore holes for cast-in-drilled hole concrete pilings on construction of Houston Freeway extension in Orange County, Calif. Job called for drilling a series of vertical and battered holes — 16" in dia. — with various depths to 72 ft. To handle work, Bertran brought in a Ka-Mo vertical drill, powered by a 34 h.p. self-contained hydraulic motor. Swung from boom of 25-ton truck crane, the 16" dia. drill bored as many as 16 holes — 55' deep — in 8 hours! At several places on job — same drill also bored eight 72-ft. holes in one 8 hr. shift. Record production — 2 to 1 over any other machine owner is familiar with — was obtained by using continuous sectionalized drill flights.

10 to 15% saving in concrete

Vic Zonver, owner of Bertran Drilling reported an unexpected saving in amount of concrete used to pour pilings bored by Ka-Mo drill. Normally, by preboring with conventional systems, hole needs 10 to 15% more concrete than estimated theoretical volume. Drilled holes by Ka-Mo continuous-auger system required only about 1% more concrete.

Pays to check

Whether your work involves angular, vertical, or horizontal drilling, it will pay you to check the Ka-Mo line. Drill sizes 2" to 48" diameter, and larger — sectionalized lengths — air, hydraulic, electric, gasoline, or diesel powered. Engineering service is always available for these special installations. Just write or call.

Mail to: KWIK-MIX CO., Ka-Mo Tools Dept., Port Washington, Wis.

☐ Send us free booklet on Ka-Mo drilling method.

NAME .... TITLE ....

COMPANY ....

STREET ....

CITY .... STATE ....

KAM 18 AMC

KWIK-MIX COMPANY — Ka-Mo Tools Dept.

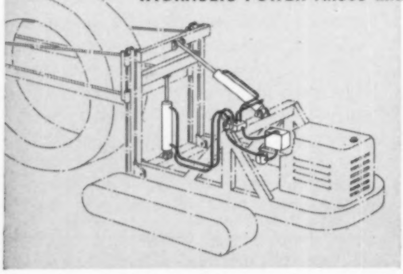
A DIVISION OF KOEHRING COMPANY

Operating on a limited budget?

Then check what this economy-size Parsons® 130 can do for you...

Here's a good, small, wheel-type ditcher in the popular low-price range that's big enough for main line trenching . . . yet, economical on extensions, service lines and other utility jobs. You get 12 inches to 18 lineal feet of trench per minute . . . 12 to 24 inches wide . . . at depths to 5¾ feet. Low in price, big in capacity, this Parsons 130 is built to the same heavy-duty high-quality standards of larger Parsons wheel Trenchliners. It has hydraulic wheel-hoist on power-tilt mast. Shiftable, reversible belt conveyor gives controlled discharge (hydraulic conveyor drive optional). To handle a wide range of soil conditions, heavy-duty digging wheel is equipped with cast-steel buckets with self-sharpening, reversible "Tap-In" teeth, quick-change gumbo buckets, retractable bucket-cleaner. Low-cost 130 also has 12-in. integral pad and rail-type crawlers. Tractor-type crawlers optional with 12-in. flat or 16-in. grouser shoes. See Parsons distributor — soon! 4 larger wheel-type, 5 ladder-type Trenchliners also available for any size trench from 6 inches to 6 feet wide, up to 19 feet deep.

HYDRAULIC POWER raises and lowers the wheel... and tilts the mast



Specified grades are easy to maintain with Parsons 130. Hydraulic ram on vertical mast raises and lowers the digging wheel — gives fractional-inch depth adjustment, maintains close grade tolerance. A separate hydraulic ram tilts mast, balances weight of wheel forward for traveling or trailer-loading. Overall width is only 8 feet (with conveyor intact) — no dismantling for transport.

Mail to: PARSONS Company, Newton, Iowa

Send us: ☐ latest literature
☐ price information on 130 Trenchliner®

NAME .... TITLE ....
COMPANY .... DIV. ....
STREET ....
CITY .... STATE ....

F922AMC

PARSONS TRENCHLINERS
(A Division of Koehring Company)

(Continued from page 189)

When the iron content of the water is much above 10 ppm, it is advisable to use an open-spray aerator because wood stave and coke tray aerators are subject to plugging by accumulation of precipitated iron.

The precipitation of iron after aeration and pH elevation is not instantaneous and the rate of precipitation varies with the type of water. The iron in highly alkaline waters containing no organic material precipitates quite readily. If the iron content of waters of this type is low, the water can be aerated and filtered with very little retention time between aeration and filtration. When the iron content is high, it is advisable to provide some settling time after aeration so that a large portion of the iron can be settled and removed as a sludge from the settling basin before the relatively clear water is filtered. This sedimentation helps prevent overloading the filters which would result in short filter runs and plugging of the filter bed. Precipitated iron on or in the filter bed tends to act as a catalyst to completely convert the freshly oxidized iron to a physical form easily filterable. Filter beds can be of the pressure or gravity type, sand or anthracite. The retention time provided in the settling basin for waters containing high concentrations of easily removable iron is generally one hour. Figure I (p. 124) shows the basic system for iron removal by aeration, setling, and filtration.

Coagulation Methods

Some waters contain organic material which ties up the iron in a complex and makes it difficult to remove by aeration and filtration. In waters of this type, even long retention periods are of little value, so it is necessary to coagulate the organic material and iron, settle and filter. Such a system is shown in Figure II (p. 124). Coagulation tests on the water are usually necessary to determine the type and quantity of treatment best suited for the particular use.

Temperature plays an important role in the rate of coagulation and precipitation. The higher the temperature of the water, the easier it is to accomplish this coagulation and precipitation. Thus, coagulation tests should be conducted at the temperature of intended operation.

Equipment required consists of a clarifier, chemical feeders and filters. If there is insufficient oxygen for conversion of ferrous to ferric iron, an aerator is usually installed ahead of the clarifier. On very difficult waters, it sometimes becomes necessary to use an oxidizing agent, usually chlorine, in addition to air in order to partially or completely destroy the organic material which may hold the iron in soluble or colloidal form.

Hot lime soda softening, hot lime zeolite softening and cold lime softening will also remove iron. It is necessary that there be sufficient oxygen to oxidize the iron from the ferrous to the ferric state.

The decision as to the type of removal system required should be based on the method that will produce the necessary results at the lowest cost for the intended use. Analytical data on the water will usually give sufficient information for a preliminary decision as to the most economical method that will produce satisfactory results. A preliminary decision should be confirmed by pilot plant or laboratory tests.

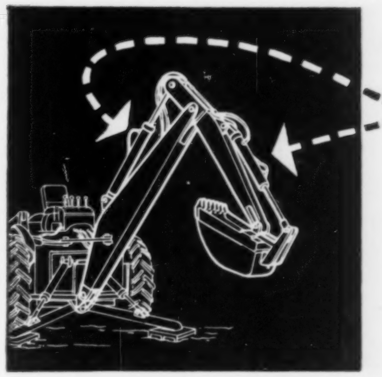
Very often manganese occurs with iron and is removed by methods similar to those used for iron. However, manganese removal is more difficult, requires a higher pH range for oxidation of manganous to manganic manganese and often requires the use of a chemical oxidant. ◄

First Police Dog In California

Milpitas is the first city in the San Francisco Bay Area—and possibly in the state—to approve officially a program for the use of police dogs. The city council authorized the purchase of one dog on an experimental basis last December. If the dog proves to be successful, additional animals will be added as needs develop. The major goals of the program are to increase the safety and effectiveness of one-man police patrols at night.

Although the use of specially-bred and trained dogs for law enforcement is common in Europe, it is a recent innovation to the United States and has so far been restricted to the East.

Milpitas' first dog, a two-year-old German Shepherd, has been delivered and is living at the home of the police sergeant who will be responsible for his use during duty hours. Two to three months will be required for joint training of the officer and the dog. The training and the practice of boarding him at a home will teach the dog to be gentle with youngsters and law abiding citizens. ◄◄



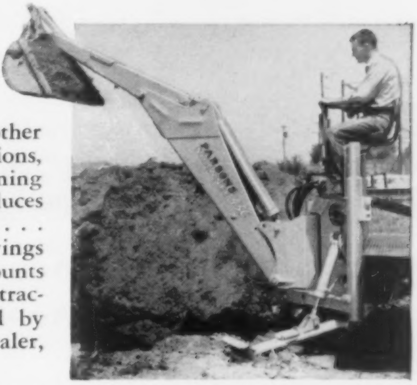
EXPOSED HYDRAULICS...

OR FULLY PROTECTED...

Which would you choose?

Only PARSONS-SHAWNEE gives you fully-protected hydraulics on both boom and dipper stick.

Cylinders, rams, and hoses are safely tucked away within box-weld frame . . . shielded from dirt, grime, and damaging blows on close-in work. It's another reason the 88-C keeps producing where other rigs fail . . . on spot excavations, digging under sidewalks, opening bell holes, etc. The 88-C produces up to 4 pay-cycles per minute . . . reaches 16′11″, digs 12′ deep, swings 188° uninterrupted . . . mounts on all popular-make wheel-tractors. For literature, or a call by your PARSONS-SHAWNEE dealer, send coupon below.



MAIL TO: PARSONS CO., SHAWNEE DEPT., *Newton, Iowa*

☐ *Send literature on the 88-C* ☐ *Have a salesman call*

Name ....

Dept. ....

Street ....

City, State ....

85 AMC

PARSONS COMPANY, ***Shawnee Dept.***

(A Division of Koehring Co.)

Ageless Concrete Pipe
Installed Next to Ageless Arsenal Foundation
For Pittsburgh Water Distribution

The building on the right is located at 40th and Foster Streets in the City of Pittsburgh and is part of the old Allegheny Arsenal built in 1814. Dig down alongside its foundation and you'll find it as good today as the day it was laid, unaffected by moisture or the elements of the soil. This foundation is built of a material that is ageless when buried underground—stone.

The pipe line being installed is made of another material unaffected by the soil—concrete. The longer concrete is buried underground, the harder and stronger it gets and the more it assumes the characteristics of the limestone from which it comes.

This pipe line will serve the City of Pittsburgh for a long, long time.

Prestressed concrete steel cylinder pipe was used for the 42-inch, 1680-foot-long line which was installed under the direction of John A. Murphy, Director, Morris L. Wolf, Chief Engineer, and John W. Bilotta, Distribution Division, Department of Water, City of Pittsburgh. Frank Kukurin & Sons, Inc., East McKeesport, Pa., was the contractor. The pipe was manufactured by Price Brothers Company, with headquarters plants at Hattiesburg, Miss. for the South and Dayton, Ohio for the North.

Price Brothers
CONCRETE PRESSURE PIPE

Tacoma, Wash., Honors Loyal Service

Tacoma, Wash., last year, established a service-pin award system to honor and recognize those employees who have served their city long and loyally.

To be eligible, an employee must have completed an aggregate of 20 years of service with the city. At the end of such a period, the employee receives an attractive, gold-filled pin designed with the city's official seal and colors of blue and gold in hard-fired enamel. He receives this at a formal ceremony with appropriate attention in the press and radio. At the same time, he receives an appropriately worded certificate signed by the mayor and the city manager or director of utilities.

As the employee continues in service, he receives additional pins for 30, 35, and 40 years of service. The 30-year pin has two two-point blue sapphires added; the 35-year pin, two two-point rubies; and the 40-year pin, two two-point diamonds.

All pins indicate the number of years for which the award was made.

Presentations by the mayor and city manager are at regular city council meetings to which the employees' families are invited. Presentations by the mayor and director of utilities are made at a special program in the utility auditorium.

At the first presentation, 143 employees received 20-year pins; 75 employees, 30-year pins; and five, 40-year pins.

Tacoma plans to continue this on an annual basis, making the awards at the first of each year. Employee appreciation of this recognition of long and loyal services has been great.

David D. Rowlands
City Manager

Tacoma's Mayor Ben Hanson presents a 40-year service pin to Charles More, Fire Battalion Chief, while City Manager David D. Rowlands presents a 40-year certificate to Albert P. Larson, equipment operator.

Avenue of the Americas Honors Nations of the Hemisphere

When Robert F. Wagner, Mayor of New York, accepted a shield bearing the coat-of-arms of the Organization of American States from John H. Muller, finance chairman of the Coat-of-Arms Committee of the Avenue of the Americas Association, a program was initiated which will see the more than 300 light poles along the Avenue of the Americas adorned with shields bearing the coats-of-arms of the nations of this hemisphere.

Mayor Wagner shares Honorary Chairmanship of the Committee with New York's Governor Nelson A. Rockefeller and the Secretary-General of the Organization of American States, the Hon. Dr. Jose A. Mora. The chairman of the Committee is the Hon. Spruille Braden, who has been Ambassador to Argentina, Colombia and Cuba.

The shields are made of porcelain enamel, three feet in diameter; each bears the coat-of-arms of one of the nations of the western hemisphere in full color on both sides. They will be suspended just under the light arm of the pole, approximately 22 feet above the street. Twenty-three different coats-of-arms will be displayed, representing the 22 nations of this hemisphere and the Organization of American States. They will be manufactured by the Municipal Street Sign Co., Inc., which has been supplying most of the city's street signs for 37 years.

The project is part of the program of the Avenue of the Americas Association to make that avenue the center of activity for the Americas in the City of New York. It is designed specifically as a salute to the nations of the western hemisphere and to remain as a permanent symbol of their unity.

ORGANIZATION OF AMERICAN STATES

Mayor Wagner is flanked by Mr. Muller (left) and Mr. Henlein as he holds the coat-of-arms of the Organization of American States.

Mr. Muller was elected President of the Avenue of the Americas Association at the annual meeting in October. Millard Henlein was re-elected Executive Vice-President.

Typical comments received were as follows:

"Your undertaking to honor the 21 American Republics and Canada by placing their coats-of-arms on the light standards illuminating the Avenue of the Americas is an appropriate and well-merited salute to the bonds of friendship which unite our country with the other nations of this hemisphere. This project will give additional signifinance to the Avenue of the Americas and beauty to New York City."—*R. R. Rubottom, Jr., Assistant Secretary of State for Inter-American Affairs.*

"As Secretary General of the Organization of American States, I am gratified to think that the escutcheons of the American republics will soon brighten the street named in their honor, reminding all who pass along that artery, New Yorkers and visitors alike, of the ties which bind together the nations of our hemisphere."—*Jose A. Mora, Secretary-General, Organization of American States.* ◄◄

DANLINE *Sweeping Brushes Are Sweeping the NATION...*

NEWARK
OVER 2000 TOWNS HAVE SWITCHED TO DANLINE WIRE CONSTRUCTION

BECAUSE DANLINE:

Outwears fibre 15 to 1.

Provides up to 500 sweeping hours before replacement.

Costs as little as 10¢ per sweeping mile.

Works all year 'round.

Assembles quickly on location without special tools.

Fits all self-propelled, tractor-drawn and front-mounted sweepers.

Because — only a brush manufacturer with Newark's 66 years experience has the ability and facilities to develop a wire brush with the superior sweeping qualities of Danline. The success of Danline lies in the new and unique locked-in-place construction which permits a uniform fill of special round, crimped steel wire of unusual toughness. This construction means Danline gives you far cleaner, easier sweeping. In addition, Danline saves you money because of longer wear and quick assembly. Find out now about these and other benefits. Write for illustrated brochure.

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the TARCO
"Scotchman"®
an *independently powered* spreader.

TARCO
"Scotchman"

Warm Weather Uses. Mount a "Scotchman" on any dump body, stake body, pick-up truck or "Jeep" for spreading: (a) **Fertilizers,** (b) **Grass Seed,** (c) **Stone Chips** or **Cement** on bleeding bituminous pavements, (d) **Rock salt** or **Calcium chloride** for soil stabilization or dust control.

Cold Weather. The "Scotchman" is most widely used **for spreading straight—unmixed—de-icing chemicals.** Remember last winter? Don't get caught again. Make room in your new budget for the "Scotchman". See your Tarco dealer for a liberal trade-in.

TARRANT MFG. CO.
23 Jumel Place, Saratoga Springs, N. Y.

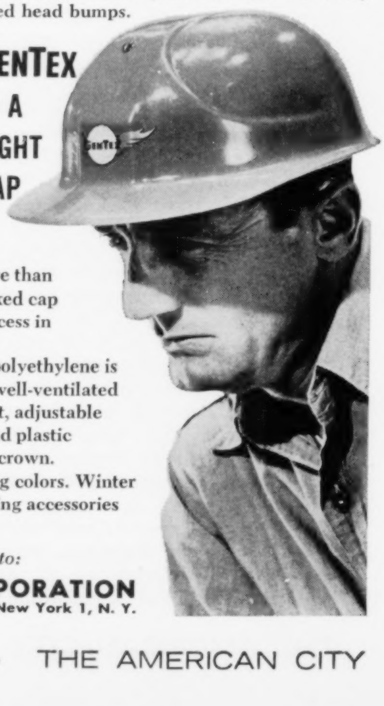
Today's hard hats guard men against head injury in the heavy construction trades...electrical industry...out on the oilfields. It's standard practice. But...

MAINTENANCE AND SERVICE PERSONNEL NEED HEAD PROTECTION, TOO! Meter readers, mechanics, maintenance men, sanitation workers, park employees, light construction workers, airlines personnel are constantly subject to unexpected head bumps.

THAT'S WHY GENTEX HAS DESIGNED A NEW LIGHTWEIGHT PROTECTIVE CAP

Weighs only 8 oz. complete, yet resists impact of more than 20-foot pounds. Peaked cap design gives most access in cramped quarters.
Color-impregnated polyethylene is comfort-contoured, well-ventilated with shock-absorbent, adjustable acetate headband and plastic foam cushion inside crown.
Full range job coding colors. Winter liners, noise controlling accessories also available.

Write for full details to:
GENTEX CORPORATION
450 Seventh Avenue, New York 1, N. Y.



Phoenix sets a high standard of street cleanliness and sticks to it; here a sweeper makes one of its daily rounds in a business area.

Street Sanitation Practices That Pay

. . . in a city that has grown tenfold in ten years and has the reputation of being the nation's cleanest.

By **R. H. SULLIVAN**
Acting Public Works Dir.
Phoenix, Ariz.

A mobile service truck for lubrication, refueling and minor maintenance in the field plus strategically located stations to house the sweepers reduce nonproductive travel to a minimum.

John Gunther, in his book, "Inside U.S.A.," says of Phoenix, Ariz.: "The cleanest city I saw in the United States." The fact that clean streets helped Phoenix win an All-America City award in 1951 and again in 1959 backs up this opinion. Such compliments are pleasant but they have been earned through hard work and sound planning.

Rapid growth in both population and area has complicated the street-cleaning problem. The city has grown from 65,000 persons in 1940 to approximately 437,000 in 1960—and some 630,000 live within the metropolitan area. From 600 to 1,000 families arrive each month and by 1975 we expect to reach the 1,000,000 mark.

As little as ten years ago the city's area was only 17.1 square miles. Now it covers 187.4 square miles. Annexation has required drastic changes in public works functions, including street sweeping.

In the late 1940's the three sweepers we had were not hard pressed to make their rounds. The operators arbitrarily divided the city among themselves and, once a week, swept each city street. But then the city began to boom. Housing developments were built, streets paved, and industry moved in. The year 1958 saw the annexation of 17 square miles of territory, adding a sweeping load of 250 curb miles. These streets had never been swept, some were only partially paved, and were repeatedly muddied by irrigation water that broke through borders and covered many streets. Some curbs were invisible under mud.

Motor patrols and front-end load-

(Continued on page 196)

(Continued from page 195)

ers broke up the dried mud, removing most of this material, and the sweepers took the rest. We also made an extensive survey to determine the best possible location for sweeper dumping points. By observation and operator-provided data we selected two dumping locations for every 28 miles of sweeping, with an alternate location in case of inclement weather and its attendant increase in debris. Average daily sweeper mileage increased from 24 to 30.2 curb miles.

Sanitation Supervisor Clyde Noack measures a wire broom after 2,191 miles of operation and finds that 4½ inches of usable broom remains.

In residential and industrial areas the city arranged to utilize vacant lots as dumping sites. Downtown, loads were dumped in the streets and picked up during the early morning hours, before traffic appeared.

Another improvement consisted of adding a supervisor to oversee the activities of the operators and substituting daily sweeping assignments for the former arbitrary schedule. Routes were laid out for consistent sweeping and maximum broom use, based on curb-miles to be swept rather than machine-mile travel. Finally, the Public Works Department initiated a preventive maintenance program for the sweepers.

Under the direction of Public Works Director K. K. King, the department made a study which resulted in the establishment of five daytime sweeping routes in the schedule, with two night routes completing the program. The study showed that residential areas were swept more easily in the daylight. Better operator vision, faster sweeping and less chance of accidents were significant advantages. Also, with more two- and three-car families moving into the city, there were more cars on the streets at night than during the day in the residential areas. At this time the city utilized nine sweepers to do the work. This planning and scheduling paid off. By the end of 1958 there were actually spare machine hours available.

Then a big challenge came. Early in 1959 the city annexed 57.4 square miles, adding some 775 curb miles to the sweeping load and in March of this year another 77.4 square miles came into the city.

More sweeping mileage meant more sweepers to maintain the same standards. For the 1959 annexation the city purchased five Wayne model 550, four-yard sweepers. These were assigned to the new area, which was divided among the sweepers at the rate of 31.4 curb miles per day. However, a new problem presented itself. The city had grown to such size that travel distance between the sweeping areas and the city's yards was too far to be practical.

After re-examination of all the routes, we set up a schedule of portal-to-portal sweeping and established four outstations to house the sweepers during non-sweeping hours. To further expedite the work, the Department constructed a service truck, fully equipped to lubricate, refuel and, in general, provide "roadside service" to the sweepers. This same unit also services other equipment such as refuse trucks, graders and tractors.

Water Supply

An important requirement in any mechanized street-sweeping operation is a convenient supply of water for dust control and for washing down the equipment after the job is done. Annexation outdistanced water supply from fire hydrants. As a temporary substitute we pump water from irrigation canals by use of 1½-inch dehydration pumps mounted on sweepers working in areas thus affected.

By late 1959 our sweepers were averaging more than 34 curb miles per day. We then added a third night route. The machine on this route cleans center stripes, median islands, safety zones and shoulders only, on a three-week cycle. The addition of two foremen to the supervisor's staff gave another boost to overall efficiency.

Planned routing of the machines is one of the most important factors in high production. By careful scheduling, 35 curb miles per day

(Continued on page 199)

COMPARATIVE COSTS OF WIRE AND FIBRE BRUSHES

(per broom)

	Cost	
Item	***Wire***	***Fibre***
Material	**$232.00**	**$46.00**
Labor	**1.18**	**7.10**
Total	**$233.18**	**$53.10**
Curb Miles Swept (Minimum)	**2,200**	
(Average)	**3,100**	**475**
Cost Per Curb Mile (Min. Mileage)	**$0.106**	
(Average Mileage)	**$0.075**	**$0.112**

NEW CATALOG Describes Latest Developments in Waste and Refuse Storage and Removal

28
PAGES
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DEMPSTER DUMPSTER®
SYSTEMS
CATALOG BRIEF 160

New Techniques Cut Cubic Yard Removal Costs to Record Low

This new 28-page color catalog describes remarkable new developments in waste control and disposal that have, within the last two years, obsoleted many systems now in use. Cubic yard handling costs have been reduced to a point where many firms and municipalities are saving thousands of dollars annually that they were previously spending to operate old-style equipment.

Materials handling and waste disposal are two of the few areas of large potential cost reduction remaining in manufacturing and municipal administration. This new catalog has a bearing on both of these areas of operation.

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Dempster Field Engineers, located in all sections of the country, make thousands of cost-finding refuse storage and collection surveys every year, without cost or obligation. If you would like to know your disposal costs, and what—if any—avenues of improvement exist, write today on your letterhead.

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- **CRYSTAL-CLEAR WATER AT LOWEST COST**
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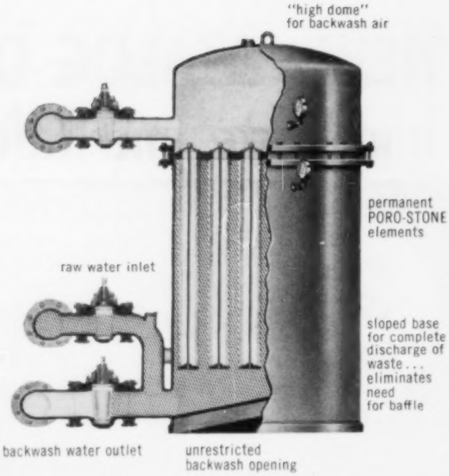
Adams SPF Diatomite Filters *require only a fraction of the installed space* of sand filters of equivalent filter capacity. Operation is very simple — nothing to disassemble or replace. Adams "pressure dome" backwashing is easy, rapid and extremely thorough yet requires a minimum amount of wash water — "*. . . the only diatomite filter with backwashing that works*", as one pool operator puts it. Adams Poro-Stone filter tubes are rugged and inert to corrosion — none has ever needed replacing. And Adams diatomite filtration removes microscopic particles including many bacteria, greatly reducing your requirements for chlorination, precipitants and Ph control. Write for Bulletin 626 for details on better filtration . . . by the country's largest manufacturer of filters for public and commercial swimming pools.


"high dome" for backwash air
permanent PORO-STONE elements
raw water inlet
sloped base for complete discharge of waste . . . eliminates need for baffle
backwash water outlet
unrestricted backwash opening

MUNICIPAL POOL

. . . at Winnsboro, S. C. One Adams SPF-238 Filter keeps its 300,000 gallons crystal-clear. Pool designed by Hugh N. Thompson, City Manager, Winnsboro, S. C. General Contractor: John C. Stewart Co., Winnsboro, S. C.

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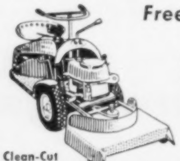

Clean-Cut
24 or 36

CLEAN-CUT MOWERS INC.
P.O. BOX 701 **DUNBAR, W. VA.**

(Continued from page 196)

for the four-yard machines has proven not only possible but practical. A Servis Recorder on each sweeper cab is another important tool, giving the supervisor an accurate record of production time. At present we are considering the installation of recording tachometers on the main broom to make possible a check on actual sweeping vs. "deadhead" time to further increase efficiency.

Operator education also pays dividends. Each operator is taught to obtain perfect broom adjustments and to perform routine preventive maintenance.

Another key to a successful program is a well-organized program of preventive maintenance. Each day the operator checks his sweeper thoroughly, washes it down and lubricates it. Every time the hopper is opened to dump a load, it is inspected for trapped debris such as wire, tree limbs or rocks—all potential sources of damage.

Oil filters and breathers are cleaned, universal joints greased, and the sweeper checked over thoroughly on a weekly basis by the service-truck personnel. Every two weeks the crank-case oil is changed and a thorough field check performed.

Once a month each unit is sent to the central maintenance yards for a critical inspection of all components. Necessary corrections, repairs and adjustments are made at this time and every six months radiators are flushed. This procedure does pay off, for our shop foreman cannot remember the last time a service call was made on a sweeper in the field. Downtime has become practically a thing of the past.

Brushes Standardized

As the result of a recently completed study of the use of Danline wire sweeping brushes, the city decided to install these brushes on all street sweepers. Early in April 1959, we installed the wire sweeping brushes on six Wayne Model 550 machines and put them to work in the newly annexed 57.4-square-mile area. Streets in this area generally had not been cleaned since construction. Debris, consisting mostly of fine silt, was several inches thick along the curb in some cases. The sweepers, equipped with the wire brushes, were able to clean the area to acceptable city standards within a 12-week period.

During this period each sweeper removed from 26 to 32 cubic yards of material each day. Under such circumstances the gutter and pick-up brooms received extremely hard use. We believe the area was cleaned up in about one-half the time that fibre brooms would have required.

The department also made a comparative test, using two sweepers, one with a wire broom and one with a fibre broom. In the first half of the test the fibre broom machine followed the wire broom unit; in the second half the positions were reversed. On the initial sweep the wire broom picked up approximately one-third more material than was picked up by the fibre broom. The wire broom picks up caked material along the curb and fine material which tends to sift through the fibre broom.

Reduced broom maintenance and replacement cost is another advantage of the wire broom. The table on page 195 shows a com-

(Continued on page 201)

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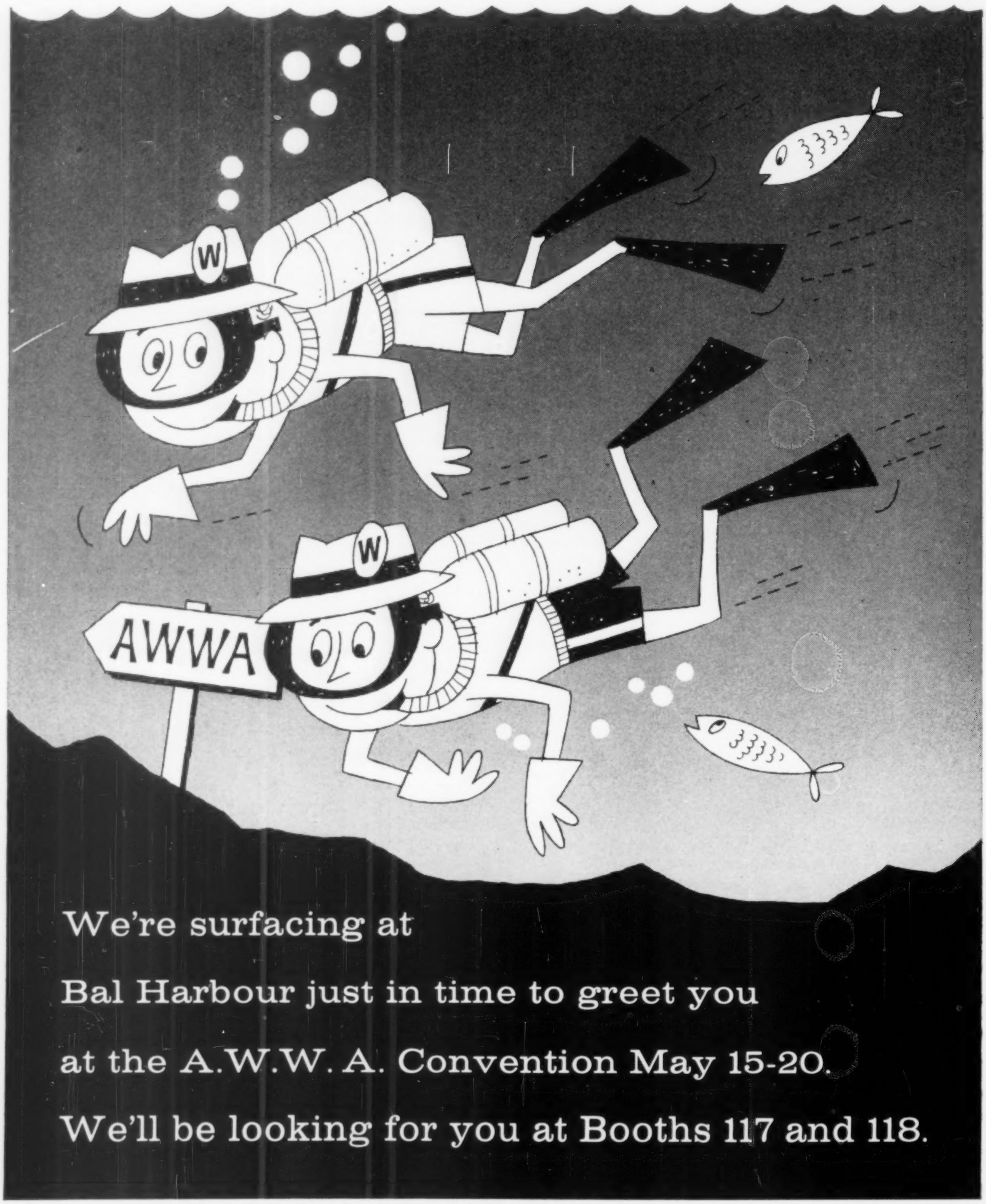
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We're surfacing at
Bal Harbour just in time to greet you
at the A.W.W.A. Convention May 15-20.
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Manufacturers of Mathews Hydrants and "Sand-Spun" Pipe (centrifugally cast in sand molds)

(Continued from page 199)

parison of cost between the two types of brooms. Note that the wire brooms have enabled us to produce a cleaner sweep at less cost per curb mile.

In the past we did encounter the difficulty of poorly wrapped fibre brooms on occasions. When this happened the complete broom was lost as soon as it was placed in operation. The Danline wire brooms come in 34 segments with each segment locked into the broom core, thus eliminating the risk of poor wrapping.

The life of the wire brushes in the initial test was 2,200 curb miles. Now that they are being used on streets more usual for the city, the average life has been extended to 3,100 miles, and some individual brooms have gone up to 4,200 miles. With more experience we anticipate raising the average life of these units.

Adjustment of the wire brooms requires greater care than fibre brooms. At first we had only the manufacturer's instructions, but actual experience has provided greater knowledge. Experience indicates that best results are obtained with a broom pattern of from 4½ to 5 inches. This width is less than that recommended by the manufacturer. On our Wayne sweepers the broom may be worn down to the side plate. With the Elgins, the side plates make it necessary to replace brushes while they are approximately 1½ inches longer.

Broom Cores

We in Phoenix have found it economical to manufacture the necessary cores for the brooms. We purchased one core for each make of sweeper and shop personnel of the Public Works Department have been able to fabricate additional cores successfully.

Phoenix at present operates 13 motor sweepers, eight Waynes and five Elgins. The 13 units sweep an average of 1,943 curb miles per week or 35 curb miles per day per sweeper. All residential streets are swept weekly, arterial streets twice a week, and streets in business areas daily.

The 77.4 square miles recently annexed, with approximately 625 curb miles to be swept, means that the city will have to increase the number of sweepers by four more machines and go through a routing program. The problems are challenging but past experience will go a long way toward finding the right solutions. ◄◄

Coordinated Work Program to End Unnecessary Street Cuts

Stockton, Calif., and city public utility companies have a cooperative planning program that is designed to facilitate cooperation during major municipal construction projects.

Almost all city construction projects affect gas, electric and water lines and the location of telephone poles. After a study of city plans the utility representatives are able to coordinate their work to avoid unnecessary street-scarring changes later.

At the same time the city can present long-range plans to the utilities so that they can coordinate their work accordingly. This work scheduling is one of the most valuable results of the program. ◄

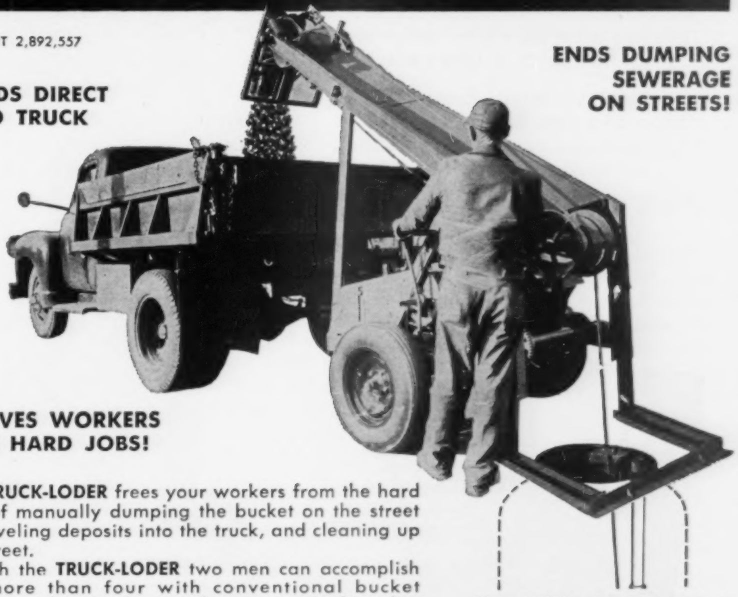
IF YOU DON'T HAVE A TRUCK-LODER

Your Sewer Crew is WORKING TOO HARD!

PATENT 2,892,557

LOADS DIRECT INTO TRUCK

ENDS DUMPING SEWERAGE ON STREETS!



RELIEVES WORKERS OF 3 HARD JOBS!

The **TRUCK-LODER** frees your workers from the hard jobs of manually dumping the bucket on the street — shoveling deposits into the truck, and cleaning up the street.

With the **TRUCK-LODER** two men can accomplish far more than four with conventional bucket machines, thereby freeing the extra men for other important sewer maintenance work.

Users report the elimination of time-consuming operations has increased sewer-cleaning capacity by 40%. They agree that **TRUCK-LODER Bucket Machines exceed all performance estimates.**

Your Flexible representative will be glad to give you facts and figures at your convenience.

Use With Your Present Machines

Use Truck-Loders on the dumping end and your regular machines on the Pull-In end. Net result—two complete, modern Truck-Loder units.

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Smith & Loveless Complete Line of Factory-Built Ejector Stations

HEADED BY THE

"MON-O-JECT"

AND THE

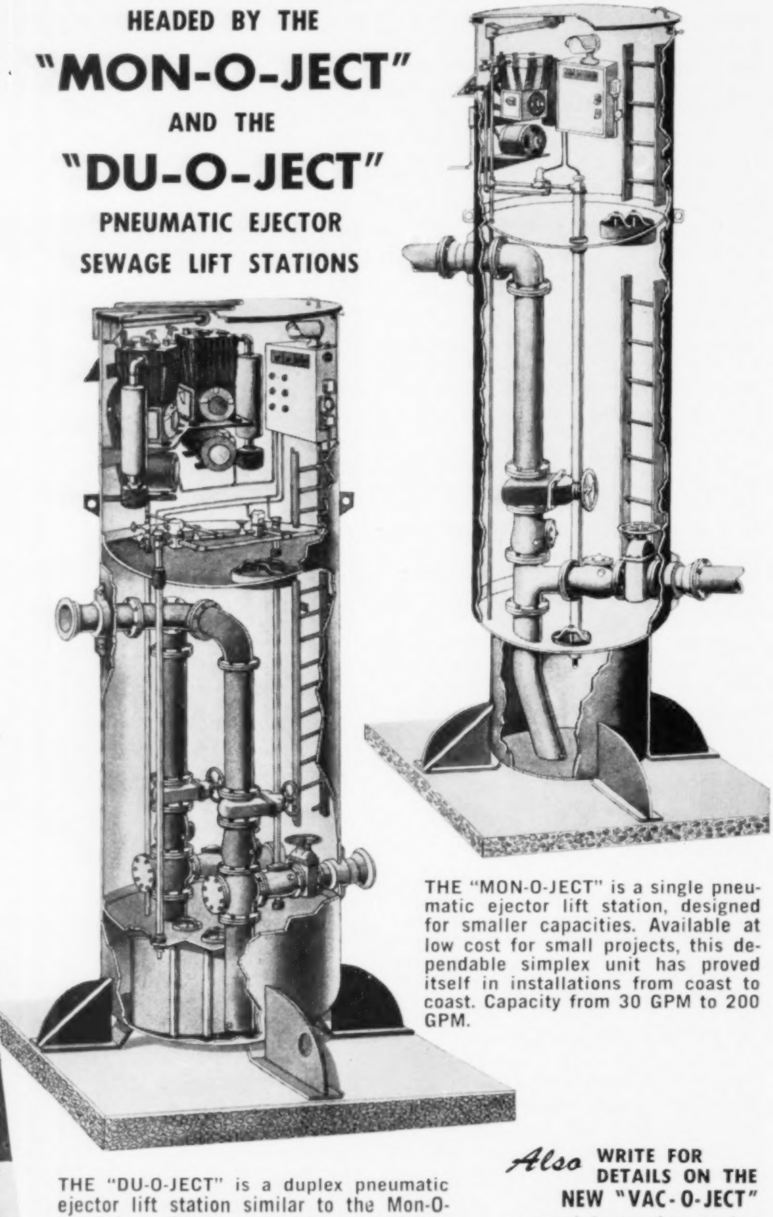
"DU-O-JECT"

PNEUMATIC EJECTOR SEWAGE LIFT STATIONS

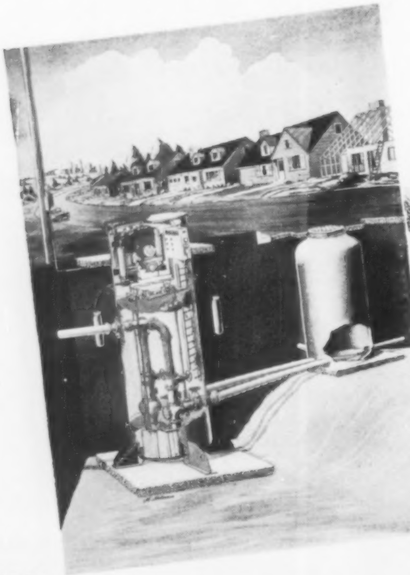
Smith & Loveless' complete line of factory-built pneumatic ejectors offers you a universal selection of sewage lift stations to meet your requirements. They are superior in design and engineering, and exceed all others in simplicity of operation, dependability and durability.

The pneumatic ejector lift station is recommended where the rated capacity is less than a minimum of 100 GPM and is the only satisfactory answer to lift smaller flows. Designed for easy, low-cost installation, minimum maintenance and economical operation. Delivered to the job site on special-built Smith & Loveless trucks.

Smith & Loveless' complete line of factory-built penumatic ejector stations also includes the "Way-O-Matic", similar to a pump station but with ejectors replacing the pump and with a superior, patented control system, and the "Pres-O-Ject", a low-cost ejector designed for simple, economical installation.



THE "MON-O-JECT" is a single pneumatic ejector lift station, designed for smaller capacities. Available at low cost for small projects, this dependable simplex unit has proved itself in installations from coast to coast. Capacity from 30 GPM to 200 GPM.



THE "DU-O-JECT" is a duplex pneumatic ejector lift station similar to the Mon-O-Ject" but with two compressors and two receivers for stand-by dependability or extra capacity at peak loads. Available in capacities from 30 GPM to 200 GPM, the "Du-O-Ject" combines dependable operation with minimum annual maintenance in a compact sewage lift station.

Also **WRITE FOR DETAILS ON THE NEW "VAC-O-JECT"**

...a minimum-size station designed for installation in a 4-foot wet well or receiving manhole. Utilizes both vacuum and pressure to give 2-stage lifting action — at the lowest cost.

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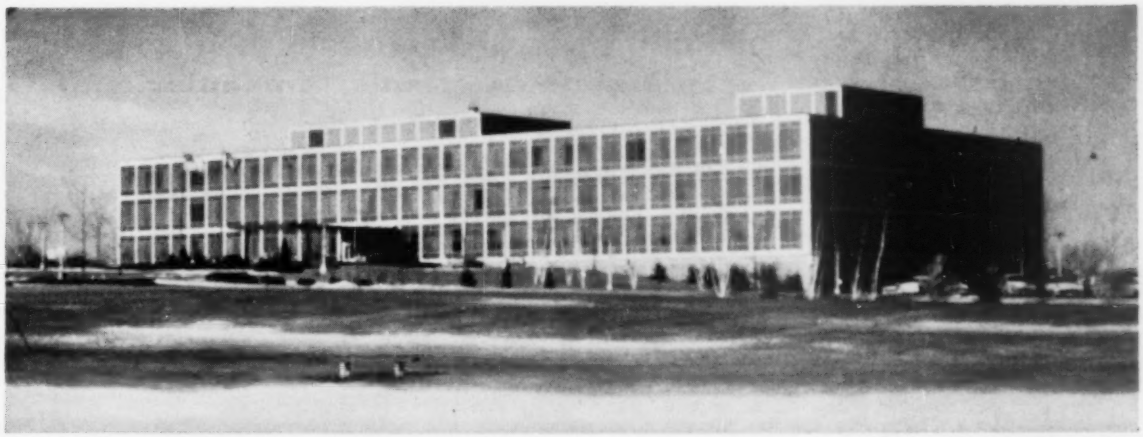


The completion of sanitary sewer facilities was one of the deciding factors in the location of this General Mills office building in Golden Valley.

Sewers Bring Industry

. . . and help lower the residential tax load

By **FRED D. GOFF***
Orr-Schelen, Inc.
Minneapolis, Minn.

The assessed valuation of the Village of Golden Valley, Minn., a suburb of Minneapolis, has more than doubled in the past five years and the total non-residential classification since 1955 has increased by 700%. Still more important, industry and commerce now carry 49% of the tax load as compared to only 9% in 1955. Sewers can take major credit for this favorable growth, or, to be more exact, a carefully planned and integrated sanitary sewer system can take the credit.

Golden Valley, with a present population of 13,000 persons and a potential of 34,000, is located only five miles from the heart of Minneapolis. It covers an area of 10.7 square miles and is well served by railroads and highways. The homes in general range from $16,000 to $25,000 in cost but many fall in the $30,000-to-$150,000 bracket. Though continued growth was assured, the village fathers wanted not only growth, but a healthy municipal financial structure as well. As early as 1952 they realized that the development of a sound tax base required the balancing effect of residential, commercial and industrial planning. Thus they adopted a restrictive building requirement supported by sound municipal ordinances and a farsighted planning program. Another item of major importance was a master plan for sanitary sewers, storm sewers and water in conjunction with a comprehensive master plan of the village to entice sound, clean, civic-minded industry and commerce to the village.

Industry Considered

The village fathers also felt that if industry could be assured of an adequate sanitary-sewer system and the availability of a water-distribution system, coupled with good schools, a park program and a development plan, they would seek entrance to the village. Thus in September 1952, the village council engaged the Minneapolis consulting engineering firm of Orr-Schelen, Inc., to prepare a preliminary survey for an interceptor system. This was to be a master sanitary-sewer plan, with working drawings and specifications to be prepared at a later date if so ordered.

The preliminary report, submitted in February 1953, recommended that:

1. The system be composed of three trunk systems.

2. The sewers be gravity type, with possible need for one lift station.

3. Design be based on Minnesota State Board of Health standards of 250 gallons per capita per day, estimated volume of 23 cfs based on 5,300 sewered acres, assuming ten persons per acre.

4. The village be divided into trunk and lateral districts if desired by council.

To eliminate the need of constructing and operating its own sewage treatment plant, the village joined the Minneapolis-St. Paul Sanitary Sewer District.

Following acceptance of the preliminary report, Orr-Schelen prepared a sewer district map of the village, and following this, each district was given an opportunity to vote on the installation of a trunk sanitary system. The village followed this policy for each trunk or lateral district as the need for sanitary sewers developed, and in November 1953 the council authorized the preparation of reports, plans and specifications for lateral sewers as ordered by the council.

Preliminary investigations on one

(Continued on page 205)

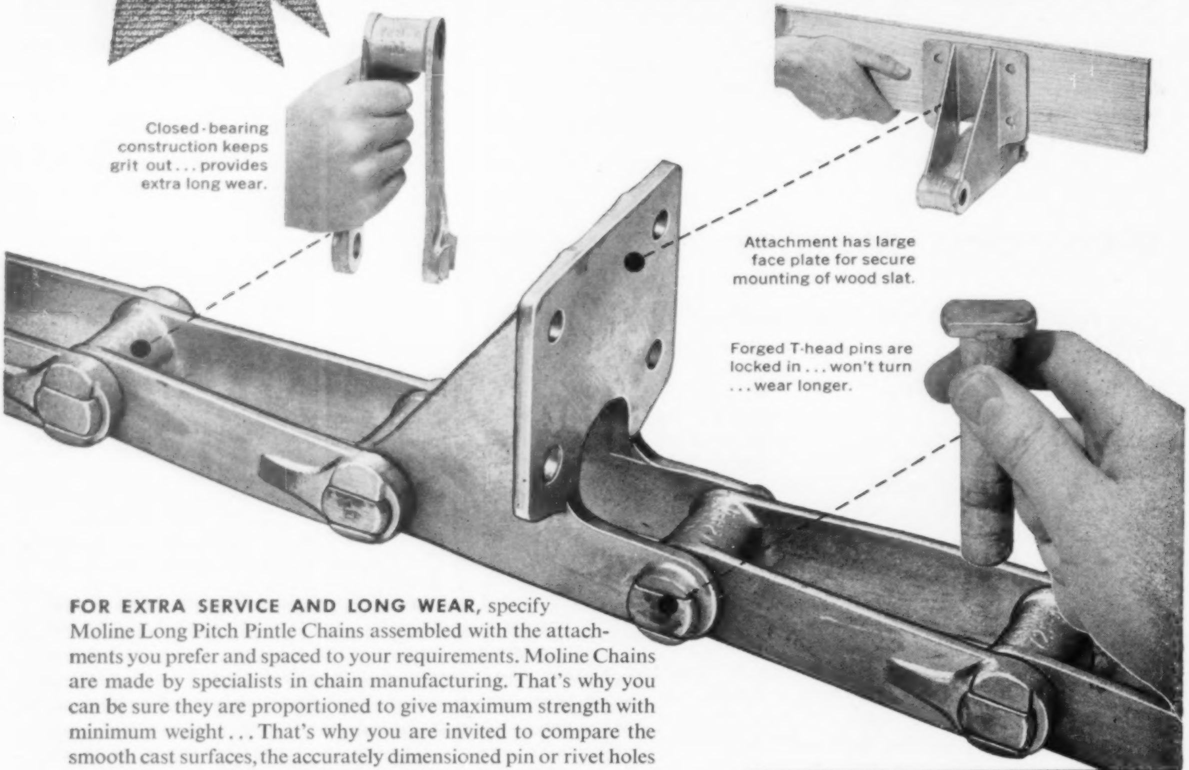
---

*Mr. Goff is Administrative Assistant for the consulting engineering firm of Orr-Schelen, Inc., 1104 Currie Ave., Minneapolis, Minn.

When selecting chain for rugged service in sewage treatment plants, remember...

60 YEARS

Specialization makes a big difference!



Closed-bearing construction keeps grit out . . . provides extra long wear.

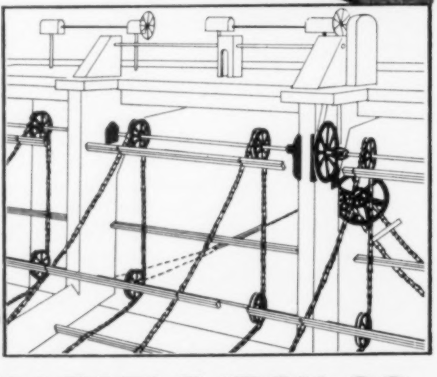
Attachment has large face plate for secure mounting of wood slat.

Forged T-head pins are locked in . . . won't turn . . . wear longer.

FOR EXTRA SERVICE AND LONG WEAR, specify Moline Long Pitch Pintle Chains assembled with the attachments you prefer and spaced to your requirements. Moline Chains are made by specialists in chain manufacturing. That's why you can be sure they are proportioned to give maximum strength with minimum weight . . . That's why you are invited to compare the smooth cast surfaces, the accurately dimensioned pin or rivet holes and many other features of Moline Chain links with any other make. Moline's "*triple checking*" test procedures guarantee their uniform, high quality.

Moline Chains are interchangeable with "standard" chains of other manufacture and are available in Malleable, Promal or special analysis metal having special corrosion resistance.

For complete information and prices, phone your local Moline distributor or write direct to the factory today!



LEADERS FOR 60 YEARS

Moline MALLEABLE Chains

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St. Charles, Illinois

Specializing in the Manufacture of Chains

(Continued from page 203)

trunk sewer showed that the neighboring community of St. Louis Park might desire to use the trunk sewer as an outlet for part of its sewer system. Through the cooperative efforts of the authorities of both communities, an agreement was reached whereby Golden Valley would supply an outlet for 10 cfs of sewage for St. Louis Park, the latter community to pay for the additional cost of oversizing and maintenance. This charge is to be paid on a metered basis arranged by contract.

Upon completion of these details, the village council began the important work of surveying the industrial and commercial fields to find favorable tenants for the village.

Continuous Construction

The first of the three trunk systems was ordered built in March 1955 and completed in January 1956 at a cost of $632,712. This project included construction of the parallel line outlet in Minneapolis at a cost of $144,600. The work involved the laying of 22,000 lineal feet of reinforced concrete and cast-iron pipe ranging in size from 12 to 48 inches.

Petitions for lateral sewers followed construction of the trunk line, and this work involved laying 132,884 lineal feet of sanitary laterals at a cost of $1,246,138.

By May 1957 the second trunk line and its laterals were completed, involving 123,500 lineal feet of vitrified clay and reinforced concrete pipe in sizes of 9 to 36 inches. The trunk cost $988,025 and the laterals $964,441.

Another $1,556,160 went into construction of the third trunk line, completed in November 1957. This involved the placing of 29,300 feet of reinforced concrete sewer pipe 12 to 30 inches in size. By the end of 1959 approximately 150,000 lineal feet of laterals were built in the area of the third trunk system, but all laterals are not as yet complete since part of the area still remains undeveloped.

In most instances the improvements were initiated by petition or upon recommendation of the engineer. After public hearings and approval by the council, the village advertised for bids and awarded contracts. After all contracts were awarded for the year, the village sold bonds, to be retired in 20 years, in the amount of the total cost of the work.

(Continued on page 207)

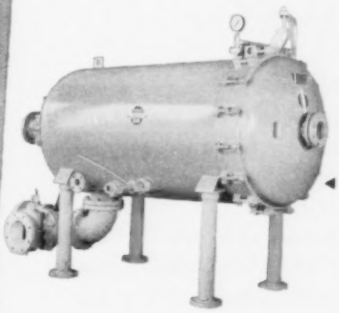
Highest Quality Water Filtration in large volume with SPARKLER DIATOMITE FILTERS!

ALOYSIUS C. KRACKLAUER
Originator of the
Large Volume Diatomite Filter

Diatomite filtration of water in large volume is a comparatively recent development by Sparkler engineers. For many years the distinct superiority of diatomite filters in producing filtered water of highest clarity, with reduced bacteria count and with absolute uniform quality has been recognized by engineers in the chemical and other industrial fields, but old style diatomite filters were limited in volume.

Now the new large volume diatomite filters engineered by Sparkler have been tested in hundreds of successful installations in many industries and for municipal water supply, and have almost completely replaced sand filters for swimming pool filtration in schools, clubs, and municipal pools because of the greatly reduced chemical treatment necessary, to produce safe water.

This new phase of water filtration is worthy of careful investigation and study by all consulting engineers who are engaged in large volume water filtration.



MODEL RJ

A closed tank, pressure filter, with self cleaning features. The spent diatomite cake is peeled off the plates with the exclusive Sparkler Hydro-Scraper knife edge pressure spray and is washed out of the tank through the sloping bottom drain. The complete cleaning operation including precoating and recirculating for clarity ready for resuming operation is less than 30 minutes; a completely new uncontaminated filter media is thus provided. Filter element and spray tubes have no metal to metal contact with tank, thus providing electrolytic protection. Fully automatic electronic operation can be furnished.

Capacities are available in a single unit for 1,500,000 gal. per 24 hr. operation.

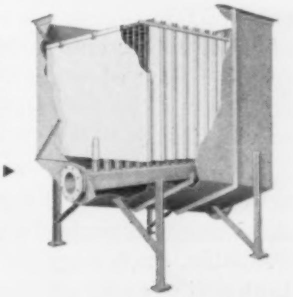
Approximately ¼ the floor space is required by this filter as compared with a sand filter and the installed cost is ⅓ to ⅔ that of sand.

MODEL HCV

A vacuum type filter that operates with an open tank and with full visibility of filtering process at all times. Plates are plugged into a self sealing outlet manifold at the bottom of the tank. Cake is removed by flushing off with hose. Spent cake flows out the self draining bottom through a T on the inlet supply pipe. Filter elements have no metal to metal contact with tank, thus eliminating electrolytic action.

This filter is available in capacities up to 900,000 gal. per 24 hr. operation.

Both filters have synthetic cloth covered plates that are removable without bolts or fastenings.



Write for bulletins and engineering data on these filters.

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IOWA FIRE HYDRANTS and GATE VALVES

One of hundreds of IOWA fire hydrants and gate valves being installed at Perini-Westward development within the city limits of West Palm Beach, Fla.

IOWA Fire Hydrants and Gate Valves form an important part of the more than $4,000,000 investment in water and sewage facilities for a completely new "City Within a City", a Perini-Westward development, entirely within the city limits of West Palm Beach, Florida. One of the owners is Louis R. Perini, Chairman of the Board of the Milwaukee Braves and President of Perini Corporation.

The eye-catching central pavilion dominates a 12-acre exhibit in the nine-square-mile area where more than 40,000 people are expected to live. Hundreds of Iowa valves and hydrants were installed to control the flow of water and provide fire protection throughout the 100 miles of cast iron water mains serving this $450,000,000 development.

The IOWA products were selected because of their proved long life and easy maintenance... plus the assurance that parts and replacements will be always available. Such longtime future service is an important part of every purchase of IOWA products.

Let us send you details on IOWA'S *complete line of valves and hydrants*

IOWA
Valves
Fire Hydrants
Accessories
IOWA VALVE COMPANY

IOWA VALVE COMPANY

Oskaloosa, Iowa

A subsidiary of James B. Clow & Sons, Inc.

(Continued from page 205)

All projects are assessed with payments spread over a 20-year period. However, the property owners can pay the entire amount and save interest, or pay the remaining principal anytime during the 20-year period. The assessments covering the project cost were made on a front-foot basis according to benefit.

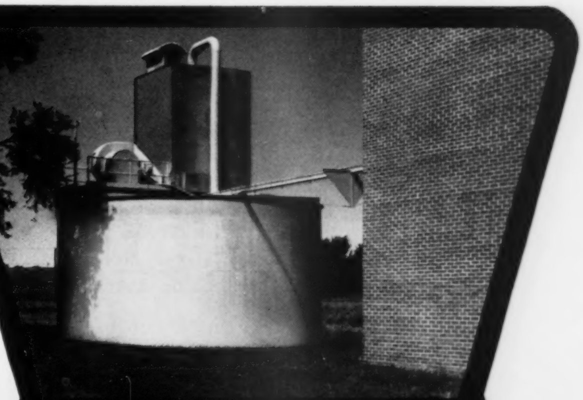
Industrial Growth

Near completion of the last trunk and lateral system was the deciding factor in the decision of General Mills, Inc., and Minneapolis-Honeywell Co. to establish their base of operations in Golden Valley. The contemplation or completion of sanitary sewers closely coincided with the location of other desirable industry in Golden Valley as listed in the accompanying table. Those listed are but a few of the industries that located in Golden Valley, and the village now boasts at least ten national enterprises and numerous other less famous, but equally desirable, tenants.

MAJOR INDUSTRIES
Recently Located in Golden Valley

Industry	*Date*
Minneapolis Gas Co.	**May 1953**
American Motors	**May 1955**
International Paper Co.	**August 1955**
General Motors Training School	**January 1955**
Federal Container Co.	**January 1957**
G. H. Tennant Co.	**January 1957**
Minneapolis-Honeywell	**May 1957**
B. F. Goodrich	**October 1957**
General Mills, Inc.	**March 1958**
General Tire Co.	**January 1958**
Upjohn Co.	**May 1958**
Standard Oil Co.	**February 1959**
Pako Corporation	**June 1959**

Industrial growth in the past five years and the change in tax structure bears evidence of the program's success. Golden Valley wanted industry to provide tax relief to the already overburdened residential property owner and went after that industry. However the village authorities know that in order to gain good industry a community must provide good schools, parks, responsible government and public utilities. In this case one of the major inducements to industry proved to be the sanitary-sewer system. To complete the program, the village, under the able administration of Roger Ulstad, Village Manager, is considering the installation of a water-distribution system—one that has already been designed for them by their consultants. ◄◄



RED WATER?
TURBIDITY?
Eliminate these problems with GFC Aerators and Filters

Iron and corrosive, odorous gases cause red water, leaky pipes and clogged meters. Unless corrected, these problems will result in loss of revenue, and consumer complaints.

GFC Forced Draft Aerators and Filters can solve these problems. They are designed for easy assembly, dependability and long life.

Ask about our new aluminum and fiberglas Aerators. Write for your copy of our new Aerator and Filter Plant bulletins with design data and problem analyses.

GENERAL FILTER CO.
WATER PROCESS EQUIPMENT AMES IOWA

AERATORS • FILTERS • SOFTENERS • CLARIFIERS
FLASH MIXERS • FLOCCULATORS • PNEUMATIC CONTROLS
ROTARY DISTRIBUTORS • SLUDGE SCRAPERS

USS American Welded Wire Fabric selected to

This is a 6-foot section of 144" elliptical concrete pipe. It has a greater flow capacity than its equivalent in round pipe and it can be installed in a minimum depth of cut with increased depth of cover. Elliptical pipe saves headroom—allows sufficient cover to reduce frost heave.

Lamar Pipe & Tile Division, American-Marietta Company, Grand Rapids—Pipe Manufacturer

L. W. Edison Company, Grand Rapids, Michigan—Contractor

USS American Welded Wire Fabric conforms perfectly to the elliptical shape of the 144″ pipe. Because of the machine prefabricated accuracy of USS American Welded Wire Fabric, cages can be formed faster, and the spacing and concentricity of cages can be accurately controlled.

strengthen concrete pipe on Michigan Highway job

The Michigan State Highway Engineers faced a problem when it came to the selection of pipe for an important new highway in Berrien County. Hydraulic and grade line considerations dictated pipe with maximum water-carrying capacity with a low flow line, but with up to 33 feet of back fill. They selected over 1,000 linear feet of elliptical, reinforced concrete pipe. Diameters varied from the smallest to the largest—18″ to 144″.* Lamar Pipe & Tile Division, American-Marietta Company, manufactured the pipe.

In the case of the 480 feet of 144″ required to withstand 33 feet of backfill, the specifications required 3 lines of reinforcement—an inner and outer cage each having 0.754 square inches per foot, and an elliptical cage having an area of 1.508 square inches per foot. Lamar Pipe & Tile elected to use American Welded Wire Fabric on this big job.

Concrete pipe manufacturers insist on quality reinforcing, meeting rigid specifications—that's why so many of them use USS American Welded Wire Fabric. This quality product—with its machine-made accuracy, assures the proper distribution of steel because the wire diameters are held to the close tolerance of ±0.003″ and their spacing may not vary by more than ¼″ center-to-center. This prefabricated product is more accurate than other forms of reinforcing. Its cold-drawn, high-tensile steel wires have a minimum yield point of 60,000 psi and a minimum ultimate strength of 75,000 psi. For more information, write to American Steel & Wire, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

*Round equivalent

USS and American are registered trademarks

To increase the strength of the pipe, by resisting diagonal tension, 320 ¾″ diameter stirrups are attached through the three cages of USS American Welded Wire Fabric.

American Steel & Wire
Division of
United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

Columbia Calcium Chloride eliminates the nuisance of dust (above) and the threat to driving safety on unpaved roads.

Columbia Calcium Chloride keeps unpaved roads dust free . . . reduces aggregate loss, too

This summer, use Columbia Calcium Chloride to keep dust down on the road where it belongs and not in the public's eye. And at the same time, cut maintenance and material costs.

Columbia Calcium Chloride keeps roads firm, smooth and dust free because it absorbs moisture from the air and retards evaporation from the road surface to hold down dust. Firmer surfaces made possible with Columbia Calcium Chloride give better bearing and less aggregate loss.

That's why public officials who know the importance of dust-free roads from a budget and public viewpoint, include Columbia Calcium Chloride in their dust control program. Their roads stay safe to drive on, pleasant to live by.

Start now to make all your unpaved roads trouble-free, economical Columbia Calcium Chloride roads. For more information, contact our nearest District Office or write our Pittsburgh Address.

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CENTRAL BUSINESS DISTRICT REDEVELOPMENT PROJECT

Mayor Bob McGraw, right center, reviews Bloomington's downtown redevelopment project with Professor R. A. Williams, City Manager E. G. Moody, and Illinois Municipal League Director Lon Sargent.

Students' Urban Renewal Plan Wins City Endorsement

Bloomington, Ill., has a new "Downtown Bloomington, 1984" project, initiated by Mayor Bob McGraw and City Manager Eugene G. Moody through the cooperation of the Graduate School of Architecture at the University of Illinois. Professor Richard A. Williams of the University, director of this project, used eight graduate students of architecture for an entire semester to study existing land and building uses in the downtown area and to recommend optimum uses of this portion of the community 25 years from now. Each of the eight students worked for about a month from the basic data entailed in the City Plan and from their own studies and presented a scale model of his proposal for the future.

Mayor McGraw, Manager Moody and several local architects then served as a panel of judges to select the best project. Following this selection, all of the eight students cooperated in refining and redeveloping this proposal into a large 8x8-foot scale model. The model and analysis by students was presented in February to a mass public meeting at the Illinois Wesleyan University Student Union Building.

The discussions which this presentation stimulated are still evident in the community. For example, the Association of Commerce has appointed a committee to investigate the future of redevelopment of the downtown area. The City Planning Commission has initiated studies to evaluate the coordination of the new thoughts with the existing street patterns as depicted in the master plan of the city.

The student comprehensive design for Bloomington's central business district for 1984 attempts to solve problems of traffic and obsolescence. It suggests modification and consolidation of already established neighborhood characteristics in ways designed to maintain their identity and traditions. It provides a design concept for new construction that is flexible, yet unified. The design acknowledges the forces that have shaped and will continue to shape the physical environment of the heart of Blooomington.

The Gridiron Plan

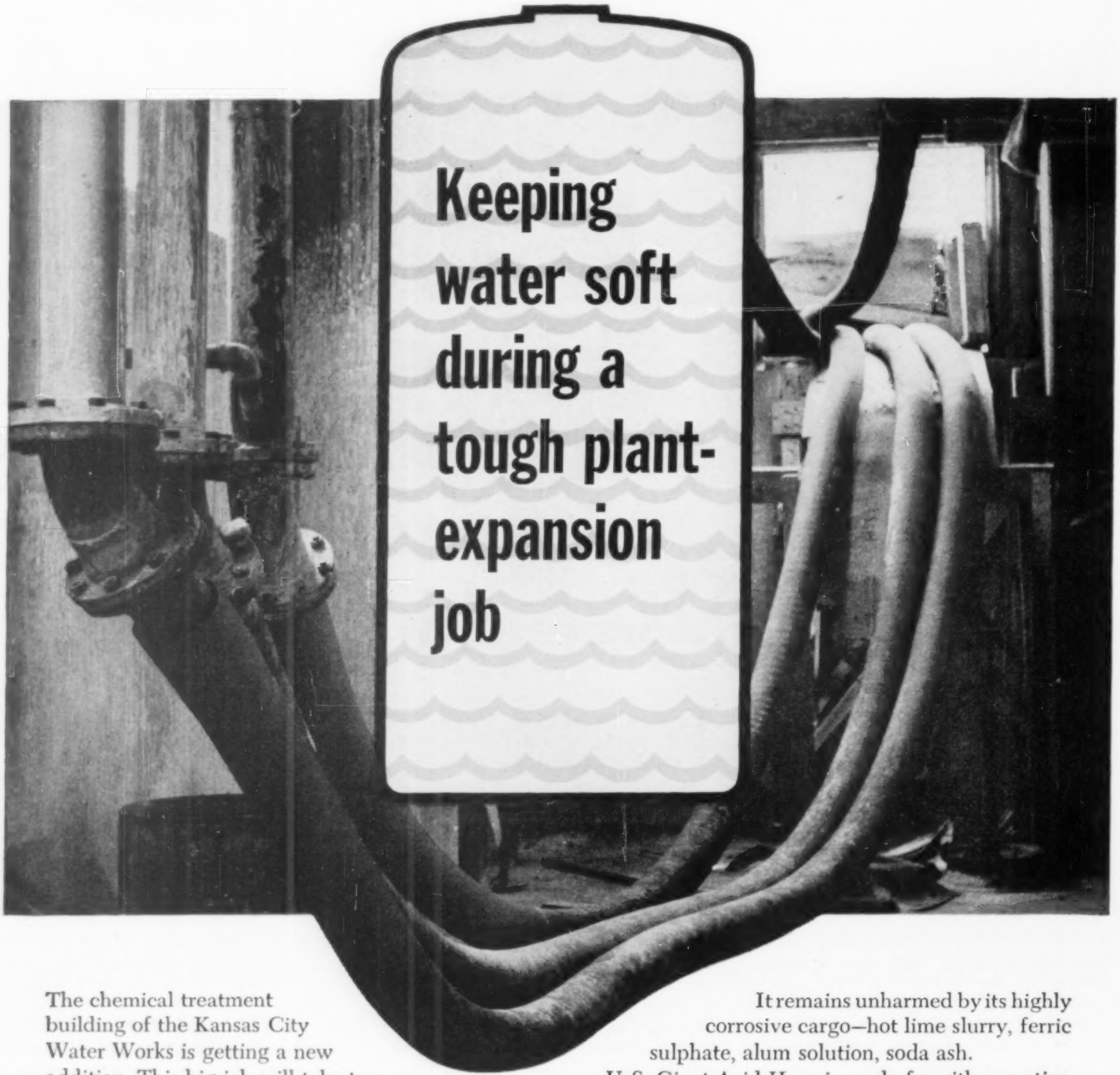
One of these forces is the "crossroads," Main Street and Washington Street, serving as natural axes of growth stemming from the 19th century gridiron plan. This right-angle intersection has influenced the form of the center of the city. The student plan intends that this form be emphasized, strongly defined and maintained in the future.

The plan presents a simple one-way counterclockwise belt of seven-lane traffic, surrounding a nine-block square area. From the belt, one-way traffic, with right-hand dropoffs, penetrates to within two blocks of the county court house. Auto traffic is excluded from the open spaces within the cruciform, which becomes a series of pedestrian malls. The elbows of the cruciform pattern of buildings have drop-off and pick-up points for autos, taxis, and buses. These elbows give access to multi-level parking garages within the cruciform, facilitating easy entrance to parking spaces. The open-lot parking areas are primarily for short-term parking. Total parking capacity is 7,200 cars. The plan anticipates use of a slow-moving "jitney" train conveying pedestrians from the parking garage to any point in the city's heart.

The four-block area containing the Court House will remain the nucleus of the central business district through intensified activity of all kinds. The students propose that

(Continued on page 215)

GIANT ACID HOSE



Keeping water soft during a tough plant-expansion job

The chemical treatment building of the Kansas City Water Works is getting a new addition. This big job will take two years, during which time the building contractor is using a simple and economical means for conveying water-softening chemicals to the water supply.

He uses chemically-resistant U.S. Giant® Acid Hose, furnished with stainless-steel fittings.

The men find it extremely flexible and easy to handle, resistant to abrasion, impact and weather.

It remains unharmed by its highly corrosive cargo—hot lime slurry, ferric sulphate, alum solution, soda ash.

U.S. Giant Acid Hose is made for either suction or discharge service, replacing metal pipe because it handles highly corrosive solutions so well.

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Cost Accounting Benefits South Bend Airport

By **ROBERT M. POOL***

Ten years ago St. Joseph County Airport at South Bend, Ind., became one of the first publicly owned airports to heed the CAA recommendations that a cost accounting system would be of great benefit to its management if installed and properly used. This airport has now built up a continuous record of valuable financial management information. A periodic financial statement, known as a cost analysis statement, shows what should be charged for space in various facilities of the airport. Costs were derived in units of thousand-pound landing weights for the landing area and in units of rentable square feet in the terminal. The range for providing a square foot of rentable area to tenants of the terminal building over the ten-year period of the system's use at South Bend has been from $2.60 to $3.37 without depreciation and $3.69 to $4.28 including depreciation, annually. The cost to land a thousand-pound unit on the landing area has varied from $0.0582 to $0.1081 without depreciation and $0.1105 to $0.1883 including depreciation, annually. Management has thus been able to use actual unit costs that were substantiated by a cost-accounting system at times of negotiation for leases and contracts with tenants and users.

In addition to divulging unit costs of use of various airport facilities, management now is able to determine whether these facilities operate at a profit or loss. In certain instances the method indicated the advisability of leasing various sites or building to tenants rather than paying for their maintenance.

Collecting the data necessary for the cost analysis statement has not required the addition of personnel at the airport.

Forms Used

It was necessary to design a cost system that would adapt itself to the requirements of the Indiana State Board of Accounts for cities of the state. These requirements consist of a uniform chart of accounts together with various forms for the recording of transactions of the airport. To comply with these requirements, it was deemed advisable to make the accounts in the State Board's uniform chart of accounts serve as controlling accounts to the cost system. Primary and secondary cost centers were then developed for the airport which were to serve in a subsidiary capacity to the controlling chart of accounts.

In addition to this, forms were designed incorporating both the requirements of budgetary appropriation accounting and cost accounting into one sheet which received the approval of the State Board of Accounts for use at the airport. It is of interest to note that similar forms were later adopted at the airports for Evansville and Indianapolis.

Systems comparable to the one at South Bend are now in operation in many airports throughout the country, and managers are continuing to receive benefits of all types from the use of the cost analysis statements that they produce. The Tampa International Airport found that it was not feasible to continue to handle the sale of gas and oil when all related costs were divulged. The cost analysis statements at Miami, Fla., periodically reveal the amount of income available for servicing revenue bond issues. The city of Montgomery, Ala., was able to negotiate a joint-use contract with nearby military installations by revealing their proportionate cost of using the airfield at the airport through analysis statements. ◄◄

---

*Mr. Pool is an accounting and business consultant in Dayton, Ohio.

Window Tint Cuts Sun's Heat

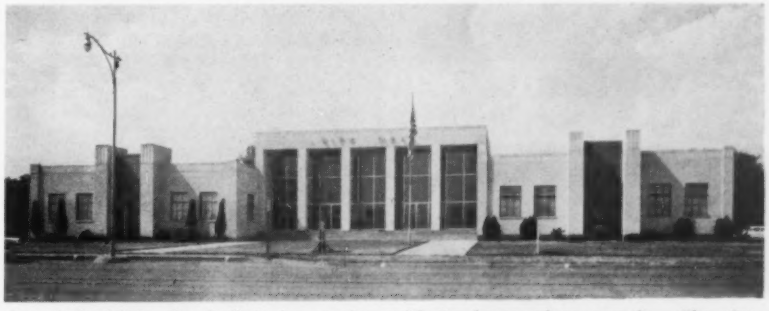
Atlanta's municipal library is reducing air-conditioning costs and at the same time eliminating glare and fade from the bright Georgia sunshine.

This glare-reducer is a plastic tint applied to the windows to provide the same effect as factory tinting. John C. Settlemayer, director of public libraries in Atlanta, noted that the patrons had been bothered at the city's main library by the sun's glare on the windows as well as the reflected heat.

The application of Sun-X* green window tint enabled him to counteract this difficulty at low cost.

The plastic is applied to existing glass windows of all types to control heat, glare and fade stemming from the sun's rays. After the glass has been tinted, the window can be washed in the same way as before.

Grand Prairie, Texas, has the same product applied to the windows of its city hall. Officials feel that the tint has reduced air-conditioning costs by $50 per month. ◄



Grand Prairie's city hall is impressive with its large glass panels. The tint applied to them helps keep the building warm.

---

* Sun-X is a duPont product supplied by and applied through American Glass Tinting Corp., P. O. Box 6565, Houston, Texas.

ADVANTAGES TO THE ENGINEER and WATERWORKS SUPERINTENDENT . . .

In the course of nearly 100 years of successful production, Ludlow and Rensselaer valves and fire hydrants have earned a reputation for excellence throughout the waterworks industry.

Not only do they exceed A.W.W.A. requirements for materials and workmanship, but they offer recognized *advantages* to the exacting engineer and waterworks superintendent . . .

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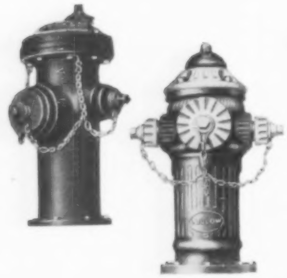
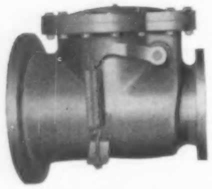
. . . time-tested, trouble-free gate and wedge mechanism. Complete shut-off. Quality and ruggedness.



HYDRANTS

. . . non-freezing; non-flooding. Breakable ground line flange. Fatigue-resistant bronze stem. Quick water. Easy inspection and repair.



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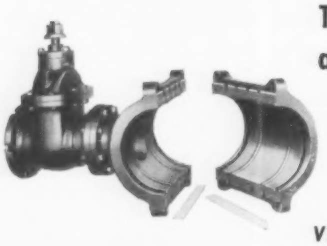
. . . non-slamming under most severe conditions by virtue of adjustable spring tension. Full clearway. Single disc. Sizes to 30".



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Visit us at Booths 84-85, National AWWA Show, Bal Harbour, Florida, May 15-20

LUDLOW & RENSSELAER

VALVES AND HYDRANTS

(Continued from page 211)

the area be provided with a skating rink similar to Rockefeller Center in New York; swimming and wading facilities; an entertainment complex having sidewalk cafes, night clubs, a bowling alley and beer garden, and various restaurants. The entertainment palace is adjacent to the lake, to a band shell, and to the new auditorium theater building.

Dominating the open spaces of the west, north and east courts are the generators of commercial activity—the department stores. These are to be services through and directly related to the multi-level parking garages. New office spaces have been carefully located to relate to the department stores and garages.

Courts and Squares

The need of a tradition to develop civic pride is well known. For this reason the four open spaces within each arm of the cruciform have been newly identified. Lincoln Square, within the south arm, contains many of the civic buildings: the new City Hall, a courthouse-courtroom-county office and a hospital complex; a new jail; and the auditorium-theater. Fell Court is located in the east arm. Named for the founder of Normal University, this court has the State Farm Insurance Office Tower as a backdrop. A sunken garden with an addition to the Withers Library gives this court an elegant character. This character sets the stage for two department stores and office buildings at its apex, and theaters and luxury shops on its flanking sides. McLean Court, in the north arm, includes a carnival area with a zoo pavilion, the department store office building tower, and a landscaped area separating the new intra-city bus terminal.

Davis Square, in the west arm, is bounded on its east side by remodeled and enlarged Montgomery Ward and on its west side by one of the principal newly built department stores.

The solution of urban housing is suggested to include town-housing arrangements and high-rise apartment buildings which have communal parking and landscaped playground areas. The greenbelt arrangement of superblock housing defines the center of the city.

The arrangement of retail stores in the central businss district follows principles of large-scale successful shopping centers. The great advantage that this plan has over shopping centers lies in the variety of activities of the central area. ◄

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WALK-THRU DESIGN No braces or frames to step over.

SLIDE-EASY, SKID-TYPE FEET . . . Protect turf from damage when moved.

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- AUTOMOTIVE-TYPE FINISH of high baked green enamel.
- RIGID, STURDY, NON-TIPPING . . . 1½" heavy welded steel tubing.
- SUPPORT ANY LENGTH TABLE . . . Use 2 frames for tables up to 10 ft.; third frame for longer tables.
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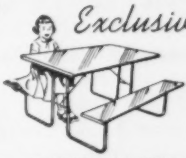

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Since 1854
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Custom-Built on FORD ½ ton Panel Delivery Truck

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WHEN CITIES PLAN INDUSTRIAL GROWTH

it pays to specify Vitrified Clay Pipe

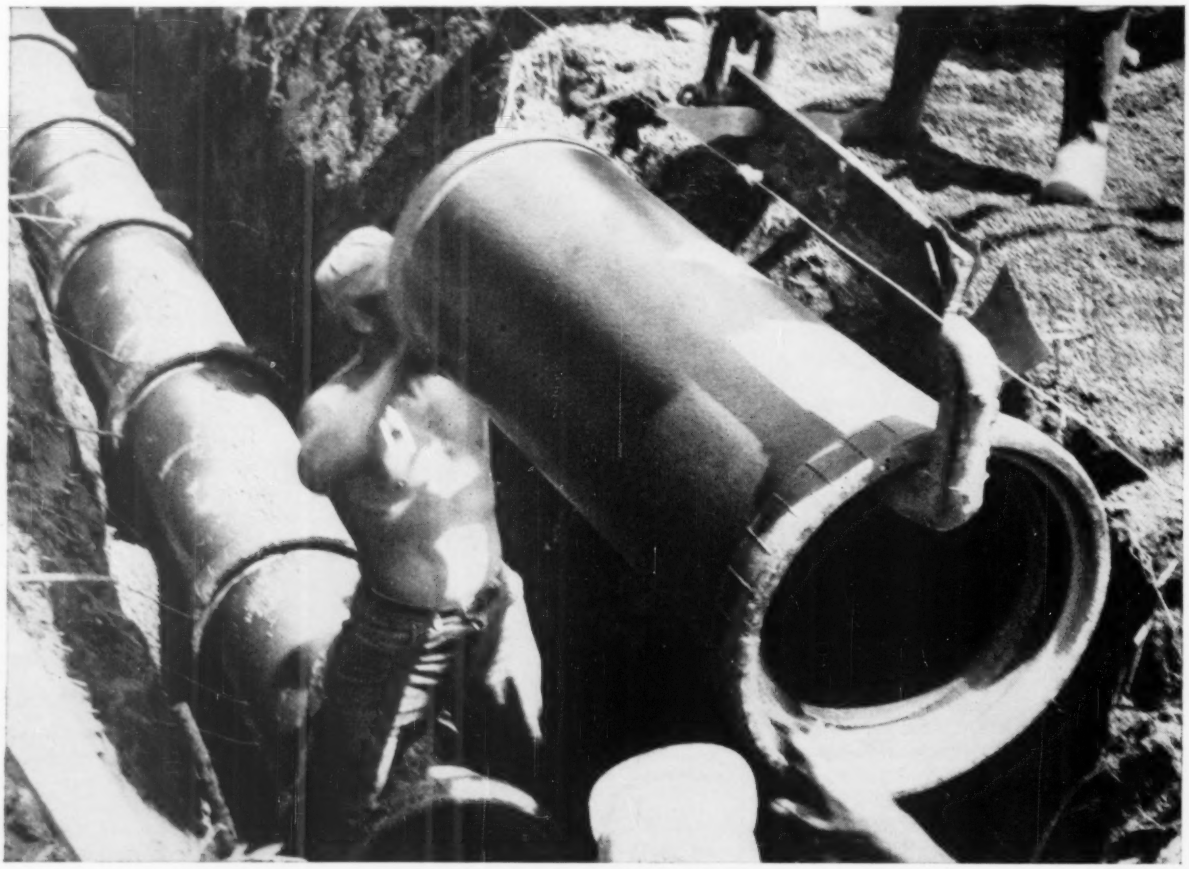
SANTA PAULA, CALIFORNIA, already a bustling center of agricultural activity, is building to share in California's phenomenal industrial growth. To accommodate new industry and meet the needs of a growing population, Santa Paula recently completed a bond-financed sewer expansion project, using Vitrified Clay Pipe exclusively. Over 6 miles of Vitrified Clay Pipe were installed.

Like Santa Paula, growing communities everywhere need the permanence and safety that only Clay Pipe can provide. Clay Pipe is the only pipe that never wears out . . . does not rust, rot, corrode, or crumble. And with its new research-developed, factory-made joints, Clay Pipe is faster and easier to install than ever before.

When your community plans new sewerage facilities, be sure to consider the exceptional advantages of Clay Pipe. Its exclusive long-term guarantee is your assurance of permanent, maintenance-free service. Only Clay Pipe has *all* the features you can trust to handle industrial growth.

CITY OFFICIALS: James E. Leary, *Mayor;* Edwin C. Bixby, Ernest H. Oman, Ralph B. Crawford, Reece B. McCalister, *Councilmen.*

CONSULTING ENGINEERS: J. M. Montgomery Engineering Co. **CONTRACTOR:** N. P. Van Valkenburgh Co.



C-159-2A

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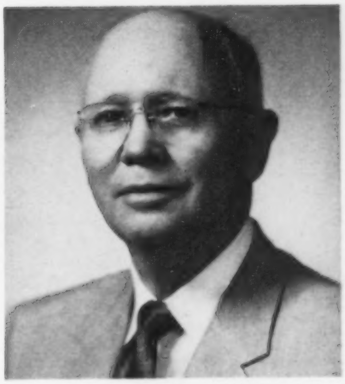
How to Purchase Successfully



Bryan Gouger

By **BRYAN GOUGER***
Manager

In any city, purchasing will be what the city purchasing agent can make it. If the purchasing agent places orders dictated by persons whose interests are not in purchasing, then his job is clerical. If the purchasing agent sees purchasing as a profit-making function he can be a member of management.

Purchasing has often been defined as securing materials and equipment of the right quality at the right time in adequate quantity and at the right price.

The right price can usually be obtained through competitive bidding. But the right price is not always the lowest price. Service should be a consideration. You can write quality into a specification, but not service. Service means delivery, able engineering service, etc.

Quantity requires knowledge of inventory which should be under direct control of purchasing. The best approach is continuous study of past usage and knowledge of the operating personnel's plans.

The purchasing agent's best approach to quality is through a standardization program, participated in by engineering and operating personnel as well as purchasing.

Standardization

How can a utility set up and operate a standardization program? Here's how we at the City Public Service Board did it. We listed every item in stock and in use by our organization. We grouped like items. This way we found a number of identical items covered under different names. This meant excessive inventory. Could these items in the same classification be reduced in number? Many could. For example—we found we were using 15 different strain clamps (we reduced this number to four), 11 suspension clamps (reduced to four), and four types of insulation on 600 V wire (reduced to two). We then catalogued all our stock items and started specification writing.

A specification is a description of the item to be purchased. It can be as simple as the manufacturer's catalog number. It can be a functional specification. It can describe in detail the parts of the item.

It is in the writing of specifications that quality is stressed. It is not a one-man job. Suppliers can contribute much to its success. The minimum is to submit the specification to the supplier. Ask him: Can you quote and furnish the item in accordance with specification? Are there any special materials or manufacturing procedures involved in manufacturing the item as specified?

Review

All standards and specifications should be reviewed at intervals not exceeding one year. An out-of-date specification or standard can cause confusion and error.

Have a purchasing manual. When you put your policies in writing make them concise and clear. There should be no question about them.

A purchasing manual also can be a text book for training new employees and saves purchasing personnel time in dealing with outside consultants. Keep the purchasing manual up to date. ◄◄

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* Mr. Gouger is the Manager of the Purchasing and Stores Department of the City Public Service Board, San Antonio, Tex.

City Interest in Compact Cars

The growing municipal interest in small-size automobiles (compacts) is illustrated by some reports appearing in the March 11, 1960 Letter of the National Institute of Governmental Purchasing, Washington 6, D. C.

Orders for 25 compact automobiles for the County of Los Angeles, Calif., are for five cars each of Rambler American, Ford Falcon, Chrysler Valiant, Chevrolet Corvair and Studebaker Lark, according to County Purchasing Agent Fred Calin.

City Purchasing Agent Paul R. Hendricks of Seattle, Wash., has notified all city departments that compacts will be substituted for all cars coming up for replacement unless a larger vehicle can be "fully justified." The small cars will be Larks, Ramblers, Corvairs, Valiants, and Falcons. The newer compacts will be placed in pool operation and records kept to determine their suitability for city use. Initial bids will be for cars of at least 127 hp and not less than 108-inch wheelbase.

The District of Columbia Police Department is planning to try compact cars for the first time, and Rexford G. Wesseils, Procurement Officer of the District of Columbia, reports that on February 25 his office received bids for 25 compact cars for the District Police Department. ◄◄

"SADDLES ARE FOR HORSES"

...not American Cast Iron Pipe!

Too often the first cost of the material is the only factor considered when deciding between cast iron pipe or a substitute. To give sole thought to the cheaper substitute piping is, in a sense, false economy because many times this lower initial cost is misleading and obscures added expenses which must be incurred later.

Yes, the first cost may be cheaper... but cast iron pipe offers so much more.

Consider tapping. For reliable, economical water service, the tapped main must meet four definite requirements: (1) Have strength to withstand tapping operation; (2) Be of an *easily* tapped material which will assure *uniform* threads; (3) Have strength after being tapped to withstand service conditions; (4) Have threads that will provide tight connections after exposure to service stresses. *Cast iron pipe meets all of these tapping requirements.*

When tapping substitute piping, it is often necessary ... to employ skilled workmen with special equipment... to utilize tapping saddles ... to use extreme care in order to make a connection that does not leak.

Remember ... tapping saddles are an extra expense and are *not necessary to make service connections to cast iron pipe.*

AMERICAN
CAST IRON PIPE CO.
BIRMINGHAM ALABAMA

SALES OFFICES
New York City • Dallas
Chicago • Kansas City
Pittsburgh • Denver
Minneapolis • Orlando
Birmingham • Cleveland

Somerville's new 3-furnace, 450-ton-per-day municipal incinerator is now in operation. Landscaping will be completed sometime this spring.

Photos by Charlotte Berman

Somerville Builds An Incinerator

Massachusetts city completes a 450-ton-per-day incinerator to dispose of its daily 120 tons of refuse; scavengers and neighboring cities will contribute material

Somerville, Mass., has just completed a crane-and-bin incinerator with three furnaces and a total rated capacity of 450 tons per 24 hours of operation.

Initially serving the Boston suburb's 100,000 residents (120 tons per eight-hour day), the incinerator is expected to become self-supporting on income received from the disposal of wastes from industry and neighboring communities.

Testing Period

During its testing period, handling city refuse only, the incinerator burned 100 to 105 tons in 6-hour shifts, using only seven of the normal 10-man crew. No industrial or privately collected waste was burned during that period. The city's 12 packer trucks on the 94,000-square-foot site were accommodated without congestion and without affecting traffic in the area.

The most densely populated city in the Commonwealth of Massachusetts, Somerville ran out of city-contained areas for dumping or landfill many years ago. Mounting costs and other problems have forced the search for alternate methods. Frequent threats of revocation of dumping privileges have been received from boards of health of towns where the city had held contracts with a private dumping firm.

Long hauls imposed high operational and maintenance costs on equipment. In only six years, annual costs for these outside facilities climbed from $30,000 to $48,000.

Then, in 1958, when dumping facilities again were jeopardized, the city conducted a comparative study of costs and methods of various solutions. Sanitary division men tallied collections from commercial establishments to determine the feasibility of a fee-collection system for businesses.

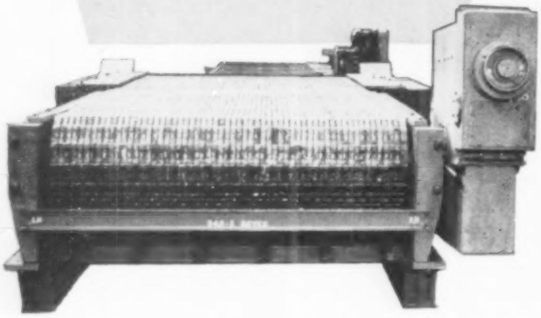
These considerations led to approval by city officials of a 20-year bond issue for construction in late summer 1958. The cost, including development, architects' and legal fees, land acquisition and construction: slightly over $3,000 per-ton-day capacity.

The plant, designed by Robert Charles Associates of Boston, is situated on 94,000 square feet of the city's Industrial Development Area, completely removed from residences.

It has three furnaces, each rated at 150 tons per 24 hours. They are circular-grate (146-square-foot) Morse Boulger furnaces, able to burn material with as much as 55% moisture content. Howe 20-ton truck scales, located just outside the access doors, record the ref-

(Continued on page 221)

ILLINOIS INCINERATORS
with Cast Steel Links
Offer
Trouble Free Performance
High Efficiency



Testing incinerator before installation in New York City's Gansevoort Refuse Disposal Plant.

Cast steel links on both the bar/key type and chain grate models provide less brittle grate surface than ordinary cast iron, with greater resistance to heat and the abrasive qualities of some refuse.

The ORIGINAL overlapping link or key design eliminates the possible clogging or damaging of links — reduces sifting of material through grate.

- Any desired number of tuyeres for better zone control
- Easily accessible take-up mechanism
- Automatic feed — No heavy stoking or cleaning of fires
- Continuous discharge of decontaminated residue

All Illinois Incinerators are customized to your needs . . . Built in any size desired up to 24 feet wide. You specify, we satisfy.

Supervised Assembly at Your Plant
Write Today for Colorful Brochure

Illinois Stoker

ALTON, ILLINOIS
Mfrs. of: Incinerators • Industrial Stokers • Sintering Machines

3½"

DRILL MASONRY HOLES UP TO 3½" Dia. SAVE UP TO 70% with NEWEST LOW-COST TRUCO® MODEL "S" and FAMOUS TRUCO DIAMOND BITS

1. Drill VERTICAL Holes
2. Drill HORIZONTAL Holes
3. Use as HAND HELD DRILL

Truco Model "S" Portable Diamond Drilling Machine is light-weight, compact; works where bigger units can't go or aren't needed. Can easily save its cost on first job; drills reinforced concrete, brick, terrazzo, all tiles. Quiet, clean, fast; no after-patching. Boon to plumbers, electricians, builders, maintenance crews. Many accessories.

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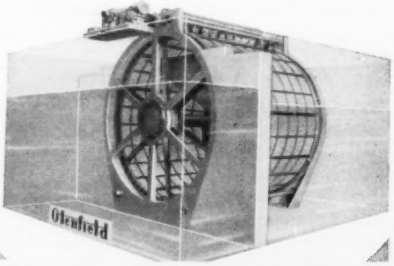
Automatic Water Filtration

. . . the Glenfield MICROSTRAINER® is the most unique advance in water filtration. Here are some of the major advantages:

low initial cost • high filtration efficiency • automatic and continuous operation under open gravity conditions • small head loss, eliminating pumping



For information on Microstraining, come to Booth #26—AWWA Convention

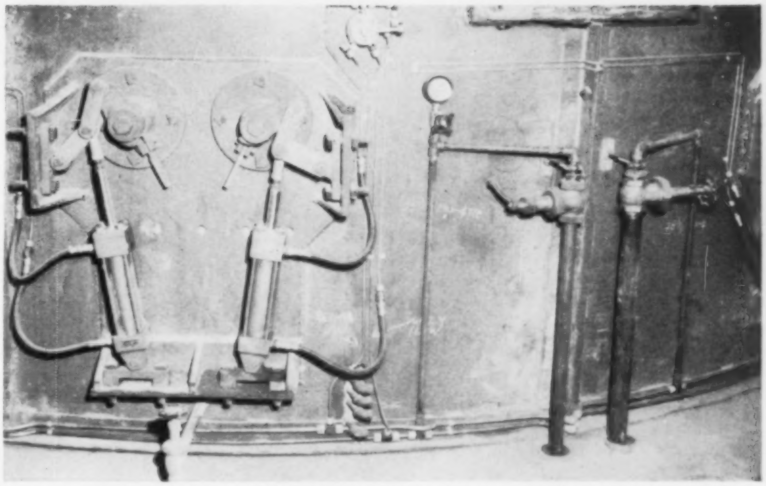
GLENFIELD & KENNEDY, INC.
275 HALSTEAD AVENUE • HARRISON, NEW YORK
Telephone: Tennyson 5-2552

(Continued from page 219)

use weight of each incoming truck. The scales are fully instrumented in an office inside the building.

The 58 x 144-foot tipping floor is within the building itself, providing complete protection from weather during discharge operations. It also provides an area for truck maintenance and washing. The storage bin is 20 feet wide, 100 feet long and 25 feet deep.

Refuse is mixed and distributed by a 4-ton P & H bridge crane, with a 6,092-pound, 2½-cubic-yard Blaw-Knox grapple bucket, charging through a hopper over each furnace. The hoisting apparatus for the bucket provides vertical velocity of 385 feet per minute, and an auxiliary setup provides a 35-fpm hoist. The crane travels 300 fpm and the bucket travel is 250 fpm. All capacities are within wide safety limits.



Each furnace is equipped with eight hydraulically operated tipping grates. Control of these grates is manual.

Power conductors for the crane are angle iron, eliminating considerable maintenance costs of conventional cable-type conductors.

During an eight-hour day, 150 tons of refuse will be distributed and burned, allowing an initial disposal program of the city's 120 tons, plus rubbish from local industry. Economies would grow as burning schedules are lengthened to serve other cities.

A large refuse chute has been provided, connecting the charging floor with the ash pit. Non-combustibles and large items can be dropped directly into the pit, bypassing ignition chambers.

Ordinarily, only the crane operator is on the charging floor, but protection on this level is provided by 42-inch concrete walls around mechanically controlled charging gates.

The 1,540 - cubic - foot furnaces burn at a normal temperature of 1,800°F. A manually operated sprinkler system in the pit wets down refuse to reduce furnace temperature when necessary. The plant is equipped with sprinklers according to National Bureau of Fire Underwriters' specifications and a fire hose is located along either side of the pit. In the event of a pit fire, the grapple bucket would be used to expose the fire to hoses.

Ashes are cooled after burning by an eight-spray quenching system in each hopper. Discharging through mechanically operated gates, ashes (approximately 5% by volume of materials handled) are loaded into two dump trucks with sealed tailgates to insure against unsightly or unpleasant dripping during transit to the residue disposal area.

Panel instruments at each furnace indicate temperatures at various points throughout the cycle. Panel controls operate fire doors, charging gates, forced-draft fan, stoker drive and other items which regulate temperature and operation. Warning signals are also mounted on these panels.

Air Pollution Considered

Furnace gases are conducted to 2,250-cubic-foot secondary chambers, and then to a single expansion chamber which decreases the velocity of the gases, and permits the heavier fly ash to drop out. A Morse Boulger spray tower, the second of its kind in this country, should eliminate residual fly ash before final exhaust through a gravity-draft chimney.

A 175-foot stack stands on a wide concrete base pedestal. It is topped by airplane guide lights four feet tall. The entire incinerator building is 144 feet wide at its widest point and 180 feet long.

The construction of the plant was initiated by Walter J. Manning, former Commissioner of Public Works. Its construction was carried to completion, and acceptance tests run by the present Commissioner, Edward T. Brady, who will be in charge of its operation. ◄◄

At City of Attleboro, Mass., operator checks level on six different wells — miles apart — by simply flipping selector switch under Teletax Indicating Receiver. Telemetered information helps him even out well-loads — prevents "sapping" a well prematurely. *Consulting Engineer:* Julian White, Boston.

at Attleboro, Massachusetts

Foxboro Telemetering puts this man at six different wells... without ever leaving the panel

Well level, flow rate, "is the pump on or off" — that's the kind of information Foxboro Teletax* Telemetering delivers to the central pumping station at Attleboro, Mass. And from wells up to four miles away.

And it's all automatic, too. If the clear well needs increased supply, Foxboro Teletax sends a "start" signal to additional pumps until the demand is met. Pumps are added in pre-determined sequence to assure that all wells contribute evenly — instead of one or two carrying the whole load.

Foxboro Teletax Telemetering can save your community money, and your personnel hundreds of miles of legwork. And help make your system operate more efficiently, too. Ask your local Foxboro Field Engineer about it. Or write for Bulletin 17-11. The Foxboro Company, 955 Neponset Ave., Foxboro, Mass.

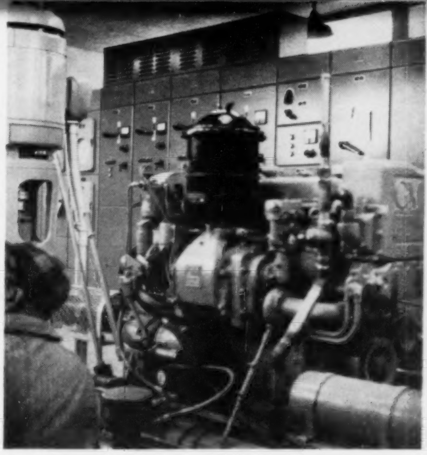
**Reg. U.S. Pat. Off.*

At well-head, two Foxboro Teletax transmitters are used. Left instrument transmits well level; transmitter at right signals rate of flow from well to reservoir. Other signals report on pump status — permit turning it on or off from central station.

FOXBORO

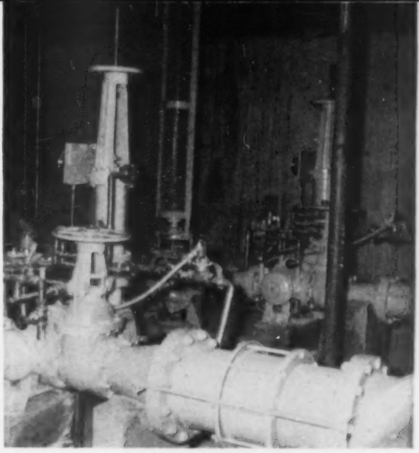
REG. U. S. PAT. OFF.

TELETAX TELEMETERING



This diesel engine will drive one of the station's two 1,200-gpm pumps during periods of electric power failure.

Ample room on the pump floor of the station permits easy access to pumps and valves for maintenance.



Mineola, N. Y., takes the heavy peak pumping load off its wells by adding . . .

Ground-Level Water Storage

By **WALTER FISHER**
Supervisor of Water Dept.
Mineola, N. Y.

Summertime peak loads will no longer be a problem in Mineola, New York, thanks to ground-level water storage and booster pumping. Although our six wells produce sufficient water on a daily basis (total capacity about 5.0 mgd) all units had to be operating to meet the late afternoon and early evening demand.

The new facilities consist of a 1.5 - million - gallon ground - level water-storage tank and a three-pump booster station. The prestressed concrete tank, constructed by Preload Concrete Structures, Inc., Westbury, L. I., N. Y., a licensee of the Preload Company, Inc., of New York, is approximately 121 feet in diameter by about 19 feet deep. All but about 2 feet are below grade. Most of the pump station, a concrete and brick structure, is also below grade. Landscaping will make both structures practically invisible. Because of the residential location, this type of installation was selected rather than an elevated tank.

Rated capacities of the three De Laval vertical centrifugal pumps are: one at 500 gpm and two at 1,200 gpm, both against a head of 170 feet. U. S. electric motors of 50-hp and 75-hp respectively supply the driving force. One of the larger pumps is also connected to a General Motors diesel engine through a Johnson right angle drive. Except for the diesel, all pumps are started and stopped through remote control from the main station.

Station piping includes hydraulically operated Chapman cone valves on the discharge side of each pump plus manually operated Eddy gate valves on both the suction and discharge side.

Instrumentation consists of Clark electrical controls and Builders-Providence instruments to measure and record the water level in the new ground-storage tank and the village's existing elevated tank, the rate of flow into the ground storage tank and out of the tank, and system pressure.

With this new addition, five of the wells pump directly into the distribution system while the sixth well, located adjacent to the new ground-storage reservoir, pumps directly into it. A 12-inch line connecting the reservoir with the distribution system permits water to flow into the tank from the system during periods when pumpage exceeds demand. This line is fitted with a 12-inch Builders-Providence butterfly valve equipped with an electric motor-driven Limitorque operator. This valve must be closed when the pumps are operating to prevent short circuiting. The pumps discharge into a 20-inch header connected to a 12-inch and 16-inch main in the distribution system.

The new facilities, designed by Sidney B. Bowne & Son, consulting engineers of Mineola, cost approximately $400,000. Funds were derived from a revenue bond issue.

Other than the need for several transmission mains to strengthen the system, the Mineola Water Department should be able to supply the demand for some time. Normal winter usage averages about 2.1 mgd while on hot summer days we pump slightly over 4.0 mgd, with the greatest demand usually taking place during the late afternoon and early evening hours. The new reservoir plus the existing 500,000-gallon elevated tank will fulfill our needs during this period. ◄◄

Landscaping will screen the pump station from neighboring homes.

North Pole
Tropic
Antarctic
Circle
South Pole

SPANNING THE AMERICAS...

Roberts Filter Manufacturing Company has been complementing the engineering profession in supplying water purification equipment to Municipalities and Industry for over 60 years.

Montreal, Quebec; Hanford, Washington; Sheboygan, Wisconsin; Charlotte, North Carolina; Quito, Ecuador, and Bogota, Colombia are just a few of the hundreds of Roberts-equipped installations throughout the United States, Canada, and Latin America.

The Roberts nameplate is the assurance of dependable trouble-free service, quality of materials and pride of workmanship.

the nameplate of dependability

MECHANICAL EQUIPMENT
BY
ROBERTS FILTER MFG. CO.
DARBY, PENNA.

Helicopters Are Not Noise Makers

Decibel-rating tests demonstrate that whirlibirds are the most noise-free of all aircraft except balloons and gliders

By **MYRON M. KAWA, Jr.**
Helicopter Project Engr.
Bell Helicopter Corp.

Today when almost all aircraft are accused of creating virtually intolerable noise problems, the helicopter stands almost alone among those that can operate at tolerable noise levels. This statement is based on conclusive scientific tests made with noise-pressure instruments that make the assertion objective and impartial.

As is well known, the most common method of sound level measurement is over-all sound pressure level which is measured in decibels. Rustling leaves in a light wind have a sound pressure level of 10 db (decibels). Very soft music has a level of 31 db. A quiet residential street has a sound pressure level of 55 db, while the level in a department store or noisy office is approximately 64 db. An automobile, with windows closed on the open highway, has a sound level of approximately 69 db. The rat-tat-tat of a riveting gun on steel is an annoying 100 db when heard from 35 feet. A boiler factory has a level of 106 db. The much-publicized sonic boom has a noise level of 140 db. People begin to suffer pain from noise at about 130 db.

Tests indicate that listeners begin to experience discomfort when sound pressure reaches levels greater than 110 db. A tickling sensation is aroused in the ear when these levels are greater than 130 db. Definite pain may occur when the levels exceed 140 db.

These are the upper limits of human tolerance. Actually we become annoyed with sounds whose level is much lower than the extremes shown.

An average truck starting up from a traffic light, for example, averages approximately 90 db in over-all noise level without attracting much attention from a person standing at a busy street intersection. However, an emergency vehicle with its siren operating and generating the same sound energy (90 db) at the listener, can be several blocks away and still demand a pedestrian's attention. It was designed to do so. The higher frequency, in cycles per second, is the attracting factor.

Duration of a sound is a factor that can have a disturbing effect. Passing vehicles, such as cars, trucks, trains, or buses, can increase the noise level for a short period of time without having any marked effect upon the observer. If the sound is prolonged at the higher level, however, it may become irritating.

The uncertain location of a noise may provoke in human beings feelings of curiosity and even of insecurity. For instance, the motorist who, while driving his still relatively new car, discovers a rattle.

A sound which is modulated in intensity or frequency is sometimes found to be much more annoying than steady sounds. There is also some evidence that people do not become accustomed to such noise as quickly as they do to steady ones.

A sound which has no good reason for its existence is likely to produce severe complaints. A recent survey conducted in England showed that of those who notice the sound of delivery trucks in their homes, only 10% are troubled by the noise; of those who hear noises made by neighbors' pets, nearly 40% are troubled.

In comparing transportation vehicles with which we are all familiar, we find that a DC-6, on take off, generates an overall noise level of 100 db when measured from 500 feet. A truck moving on the highway develops 91 db when measured from 20 feet. A train generates slightly less, 88 db, when measured from 100 feet.

(Continued on page 227)

KOHLER
ELECTRIC
PLANTS

Cost-saving independent power

Emergency...Portable

Kohler emergency plants, equipped with automatic transfer switch and installed as specified by the OCDM —will qualify you for the purchase of radio equipment with matching Federal funds . . . Portable Kohler models provide the compact, reliable power you need for street repairs, fire and rescue trucks, park maintenance . . . Sizes to 100KW, gasoline and diesel. Write for folder H-43.

KOHLER CO. *Established 1873* KOHLER, WIS.

MODEL 5RM21, *5KW, 115 volt AC. Air-cooled, gasoline. Remote start.*

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Enameled Iron and Vitreous China Plumbing Fixtures • All-brass Fittings • Electric Plants • Air-cooled Engines • Precision Controls

McDONALD'S 104 YEARS OF EXPERIENCE STAND BEHIND THIS PRODUCT

McDonald 4717 Curb Stop— Minneapolis pattern. Combined cap and tee handle inverted key curb stop. Both ends copper pipe couplings. Round way. Also available in stop and drain patterns. Sizes — ½, ¾, 1, 1¼, 1½ and 2 inches. A catalog of McDonald's complete line of water works brass goods is available on request. Write to:

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GAS HOLDERS

for recovery of sewage gasses

Many municipalities are salvaging sewer gas for fuel, through the use of Cole gas holders similar to the one pictured. Send us your inquiries for tanks of this type—as well as for elevated water storage tanks . . . Take advantage of our 106 years of specialized knowledge and experience in serving America's municipalities and industries and discuss your problems with us. Visitors are always welcome at our plant. Stop by and see us.

Elevated Tanks, Pressure Vessels, Chemical and Processing Equipment from Aluminum, Stainless and Carbon Steel, Monel and Other Alloys.

Established 1854

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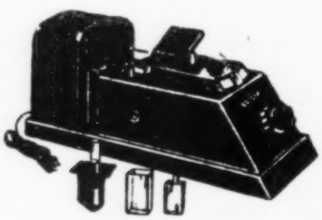
KLETT SUMMERSON
ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street New York, N. Y.

(Continued from page 225)

The Bell Model 47-J helicopter has a sound pressure lower than any of these—85 db at 300 feet and 78 db at 500 feet.

Although the typical city ordinances do not quantitatively indicate the noise levels permitted, a number of municipal government studies have been made in business, residential, and industrial areas to restrict, in terms of magnitude and frequency, maximum noise levels permitted. Based on these studies, zoning ordinances have been set up to control and separate noise areas, such as business and industrial from residential.

The results of one of the noise control studies indicate the target maximum sound pressure levels permitted by the district ordinance. For heavy industrial areas, the maximum permitted sound pressure level is in the order of 93 db. In business areas, a peak of 82 db is allowed. The maximum noise in residential areas should not exceed 76 db.

In a quiet residential area, there is no annoyance when the area sound pressure level is 71 db. Mild annoyance can be expected when this level reaches 78 db. Strong complaints are present when a noise reaches 82 db. Court action is threatened when the noise level reaches 93 db.

Business Districts

People living in a business community are in an environment of higher noise level than that encountered in the quiet residential area; therefore, a greater tolerance to increased noise levels is expected The response to the sound pressure levels of the airplane, truck, train and helicopter in this area is as follows: There is no annoyance when the Bell Model 47-J helicopter is flown over the community at 500 feet. However, the 100 db noise level generated by the DC-6 transport on takeoff at 500 feet would bring threats of court action. A train running through this area generating a noise level of 88 db would bring mild complaints from the public. Movement of heavy trucks through the business area would result in slightly more complaints than that caused by the train.

If the various types of transportation vehicles are considered in the noise environment of a heavy industrial section, only mild complaints would be expected from the 100 db noise level generated by the airplane. The train and truck would cause very mild annoyance while the helicopter flying at 500 feet would again cause no annoyance.

To summarize, sounds become noises to individuals depending on their intensity, duration, frequency spectrum, and distance from the listener. The tolerance of people to noise is dependent to a great extent on the environmental noise level of an area in which the noise is encountered. Unfamiliar sounds and noises of uncertain location tend to annoy a great many people.

Comparison of the measured and perceived noise levels generated by airplanes, trucks, trains and helicopters show the helicopter to generate the least amount of noise at the distance considered. In addition, results of studies of the maximum noise level to be permitted in municipally zoned districts and the expected response of the residents of these districts to a given noise level indicate that the noise level of the helicopter is well within the prescribed level and will cause little or no resident annoyance. ◂◂

Standardize on cleanliness with **LAWSON** quality galvanized cans and pails

"Dome Top" **REFUSE CAN**

Removable, self-closing "Dome Top" makes these modern cans verminproof, rainproof—provides fire and health protection at all public places. Hand-dipped galvanized, heavily reinforced, extra durable.

No. 1434—24 gal. **No. 3434—32 gal.**

No. 1434

"Dome Top" **COVERS**

transform drums and cans into safe, sanitary waste receptacles.
Four sizes: **No. 5555**, 23¾" inside diam. fits 55 gal. oil drums; for smaller drums and ash cans—**No. 3434-T**, 20⅞" diam.; **No. 1434-T**, 19½" diam.; **No. 1515**, 14½" diam.

No. 5555

Flat top covers for 55-gal. drums also available.

HEAVY DUTY PAILS

Extra-sturdy, reinforced steel pails that meet the toughest requirements.

- **"Janitor" model in four sizes, 12 to 20 quart capacities.**
- **"Contractor" model—3 styles, each 14 qt.**
- **"Government" type — a 14 qt. pail that meets Federal Specifications RR-B-771A, Class B.**

"JANITOR" MODEL

SEE YOUR DEALER

Warehouses in Principal Cities

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LAWSON PRODUCTS ARE NATIONALLY ADVERTISED

NON-CLOG SEWAGE AND TRASH PUMPS... a Fairbanks, Morse first, are matchless in mechanical construction and long-life, low-cost quality! Designed to handle unscreened sewage, storm water, and industrial wastes, our Non-Clog Pumps are the products of 75 years experience in making better pumps for municipalities.

More City Halls call for F-M PUMPS and MOTORS than any other kind

There is a Fairbanks, Morse pump to meet all the needs of any municipality, regardless of size or location. Vertical type pumps ideal for wet or dry pit installation. Horizontal type pumps for direct drive.

ANGLE FLOW PUMPS... proved big volume performers because of wide, unobstructed passages through impeller and volute, are ideal for sewage and storm water. Rugged construction insures low-cost operation! Standard sizes (vertical or horizontal) available in horse powers and capacities for every requirement. Vertical units designed for dry or wet pit service. Horizontal pumps mounted either on soleplates or steel baseplates can be powered by direct-connected motor.

WE ALSO MANUFACTURE peak efficiency Turbine Pumps for municipal water systems, single and Multi-Stage Centrifugals for booster stations... and Fire Pumps. For more information, write:

Fairbanks, Morse
PUMP AND HYDRAULIC DIVISION • KANSAS CITY, KANSAS

A MAJOR INDUSTRIAL COMPONENT OF FAIRBANKS WHITNEY CORPORATION, NEW YORK

Air conditioning the various restaurants, club rooms and other facilities in Aqueduct's grandstand requires up to 700 gpm of water. The structure covers seven acres of ground.

New York's Aqueduct Racetrack A Big Water User

Sport facility places a demand on its water system comparable to that of a small city

A water department within a water department best describes the facilities required to service Aqueduct, New York's newest and this country's largest race track installation. In designing the water supply facilities, the engineers of the Stone & Webster Engineering Corporation had to provide for the needs of a maximum capacity of 80,000 persons, 20,000 of them seated in the grandstand and clubhouse.

Resources include not only a domestic water supply but also provision for air conditioning and track watering, which could well be compared to the residential and industrial needs of a typical community.

Installations such as stadiums and large sports arenas similar to that now being constructed in Pittsburgh, although not as large as Aqueduct, present the same type of problems.

The domestic supply for the grandstand and clubhouse includes water for plumbing fixtures, drinking fountains, water coolers, numerous concession stands, kitchens and restaurants. The food service facilities alone are capable of serving 14,000 persons at one time. These include four dining rooms and cafeterias, a main clubhouse restaurant accommodating 1,200 persons, and numerous bars.

Other water uses run from showers and surgical sinks in the 25-bed hospital and first-aid rooms to developing tanks in the darkrooms where the photo-finish films and other photographs are developed.

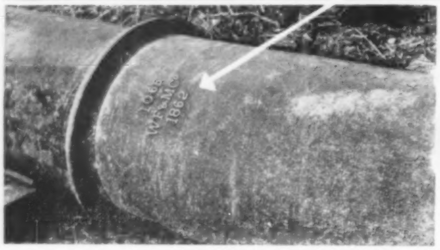
The plumbing system required 30 miles of assorted piping, using copper, steel, wrought iron and cast iron for the various services. Plumbing fixtures include over 300 water closets, 200 urinals, 200 lavatories and 70 water coolers.

An independent system installed in the stable area provides for the drinking and washing requirements of 500 horses as well as the needs of the cafeteria, showers and fountains for grooms and stable hands.

The 22 air-conditioning systems, having a total capacity of over 800 tons of refrigeration, require 700 gpm of water when all are in operation. Another important water distribution system is that required to water the track, to keep it in proper condition for racing, and to water the $600,000 worth of landscaping covering 60 acres. On hot days specially equipped trucks apply about 20,000 gallons of water between each race.

Conservation is practiced in con-

(Continued on page 231)



Symbols of PERMANENCE and DEPENDABILITY

Over $1,000,000 saved by reusing 93 year old Cast Iron water pipe

While this cast iron pipe was produced in our foundry nearly 100 years ago and serves to give added proof of the *durability* and *permanence* of cast iron pipe installations, this example is by no means either exceptional or even one of the oldest of recorded long-time service.

THE CAST IRON PIPE CENTURY CLUB

This unique club whose membership is made up of those cities in the U.S.A. having cast iron pipe installations of 100 years of age or more, was established by the Cast Iron Pipe Research Association in 1947. Today's membership is over 100 and is growing regularly.

BIG SAVINGS

In addition to the value of permanence and uninterrupted service, many cities and conmmunities are realizing sizable dollar savings in instances where extensions or various changes in layouts need be made. With the pipe illustrated, Jersey City, New Jersey, was able to clean, relay and reline the old existing 36-inch pipe at a saving of over $1,000,000 based upon the estimated cost of placing a new line into service. The re-laid main will provide a capacity of 35 m. g. d. of water when required and the City anticipates another century of service from this pipe.

Warren pipe and fittings have been making their contribution to projects and developments for 100 years—literally providing

"A Century of Quality in Service."

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Liberty 2-7979

Plants: Phillipsburg, N. J.; Everett, Mass.
Producers of sand-spun pipe, deLavaud pipe, pressure pipe fittings, iron ore mines, crushed stone & sand.
In Our Second Century of FLOWERING PROGRESS.

(Continued from page 229)

nection with the air-conditioning and track-watering operations. Under normal conditions, water that flows through the air-conditioning systems is used for lawn and track watering, or if watering is not required, it is returned to the ground through diffusion wells. It is also used for make-up water in the infield lakes.

To furnish the flow rate of about 1,000 gpm (1.44 mgd) needed for the domestic supply, Aqueduct connected on to the New York Water Service Corporation's system by means of a 10-inch cast-iron main about 1,200 feet long. A water pressure of 73 psi gauge is required at the ground floor in order to maintain a residual pressure of 15 psi at the fixtures on the fourth floor with a 1,000-gpm demand.

Since normal pressure from the city system is only about 20 psi at the grandstand, a tankless system consisting of four pumps was installed to boost the pressure to the required 73 psi. A system of controls regulates the number of pumps in operation in accordance with demand. One small pump runs continuously to maintain pressure during periods of low or no flow.

The New York Racing Association, Inc., a non-profit organization that owns the $33,000,000 installation, provided its own water supply for air conditioning and lawn and track watering. This consists of a 14-inch-diameter well fitted with a Johnston turbine pump rated at 700 gpm capacity. Power is supplied by a 75 hp U. S. electric motor.

Use of this well avoids placing excessive demands on the public water supply system and also provides water at constant low temperature, resulting in more economical air-conditioning operation. ◄◄

Extensive County Radio

A two-way radio communications system, which includes more than 165 extensively-transistorized radio units, is being installed by Motorola in the Suffolk County, N. Y., Police Department.

The $220,000 contract includes 128 radios for sector and highway patrol cars; 38 units for detectives' cars; 20 "Dispatcher" radios for motorcycles; 12 "Handie-Talkie" portable radio-phones; two 250-watt base stations; and 890-960 mc control and repeater stations. The units utilize transistors for greater reliability and low current drain. ◄◄

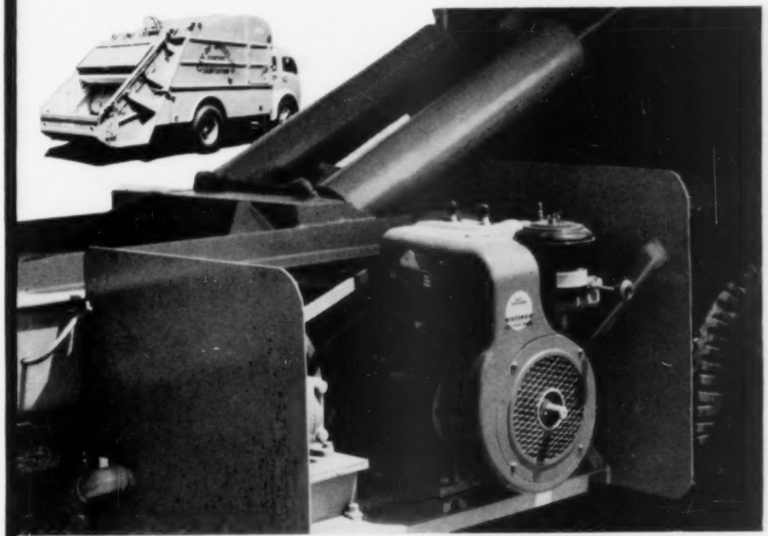
International Urban Congress To Meet in Tel Aviv

The 15th International Congress of Local Authorities will be held at Tel Aviv in Israel from the 16th to the 23rd of November, 1960. The Congress, which is organized by the International Union of Local Authorities will provide the first worldwide discussion on "The tasks of local authorities in development areas."

Various aspects of this theme will be introduced by reporters from selected countries in various areas of the world. Special attention will be given to industrial development.

Detailed information on the congress can be obtained from the International Union of Local Authorities, Paleisstraat 5, The Hague, Netherlands. The deadline for enrollment has been fixed for June 15th, 1960. ◄◄

WISCONSIN Air-Cooled **ENGINE** helps speed refuse collection



Speedlift® Power Packers are built by the Daybrook Hydraulic Division, Young Spring & Wire Corp., Bowling Green, Ohio.

Now you can satisfy public clamor for faster refuse collection at lower cost. It's being done in other cities with Wisconsin-powered packers, like the sleek Daybrook Speedlift® shown above.

Here's proof, based on official reports from a large city in the Southwest: Each of the 20 Wisconsin-powered Daybrooks services from 850 to 900 homes daily in seven hours or less.

The 18-hp THD Wisconsin Heavy-Duty Air-Cooled Engine powers all packer operations. Thus, auxiliary power permits the use of an automatic truck transmission. This slashes clutch maintenance and driver fatigue, speeds collections, and cuts gas consumption.

The "Wisconsin" offers all-weather dependability for year-around collections in temperatures ranging from sub-zero to 140°F. Precision-fitted construction assures smooth-firing power with minimum wear and maintenance. And trouble-free air-cooling cuts the cost of upkeep to the bone.

Specify Wisconsin Engines on equipment that you buy. Sizes from 3 to 56 hp — with electric starting and choice of fuel system. Write to Dept. U-10 for Bulletin S-249.

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

In Order To Be "Garbage-Free"

Universally the word "garbage" means an unpleasant—and unavoidable — by-product of community living and an ever-present threat to the health and safety of the community.

Garbage collection and dumping has placed a financial burden on municipal shoulders that most communities can ill-afford. It grows heavier as the population increases. The solution lies in the growing trend to "garbage-free" communities. More than sixty cities from coast to coast currently are ridding themselves of the problem. Many other progressive communities are anxious to join the trend and are searching for answers to the questions that arise in launching such a program successfully. Your community may be looking for some of these answers.

Don Kuhn, Administrative Assistant, East Detroit, says, "There are 11,500 single-family residences in our city, and approximately 40% are equipped with garbage disposers. We feel garbage disposers are definitely an asset to homeowners and city officials."

W. C. Light, Director of Public Service, Boulder, Colorado, has this to say: "As of January 1, 1959, we had 6,500 single family residences, of which perhaps 50% . . . have disposers. I would guess that at least 75% of all new homes are installing garbage disposers. The city has no objections to the use of such equipment. So far, there has been no trouble encountered at the sewage treatment plant and the lack of garbage cans is certainly more sanitary, sightly and economical."

Robert O. Wright, City Manager, Aurora, Colorado, says: "We have 9,351 water accounts including duplexes with 4,998 disposers—or about 53%. The city attitude is that disposers are a good thing, since they permit elimination of garbage pickup as a part of the general city service."

From John F. Hagerty, Inspector of Plumbing for the City of Quincy, Mass., comes this report: "The number of new dwelling units constructed from 1953 to 1959 was 1,169. From 1953 to 1955, disposers were installed in 50% of the dwellings; from 1955 to 1957, in 65%; and from 1957 to 1959, in 85% of all new dwelling units. We have installed disposers in our two new junior high schools and are in the process of installing them in our community's five other junior high schools."

Typical Conditions

Conditions that led to action in Sherwood Hills, Wis., are typical of many communities. Garbage collection was a nuisance. Disposing of it was becoming a problem. And increasing numbers of taxpayers were installing disposers in their homes, making it inequitable to continue using public funds to provide service for a shrinking percentage of the community. For their solution, city officials had to choose between using a landfill, operating an incinerator, or requiring a garbage disposer to be installed in every home. They chose the last of these.

That was in 1953. A recent check with these officials indicates that the solids content of their sewage

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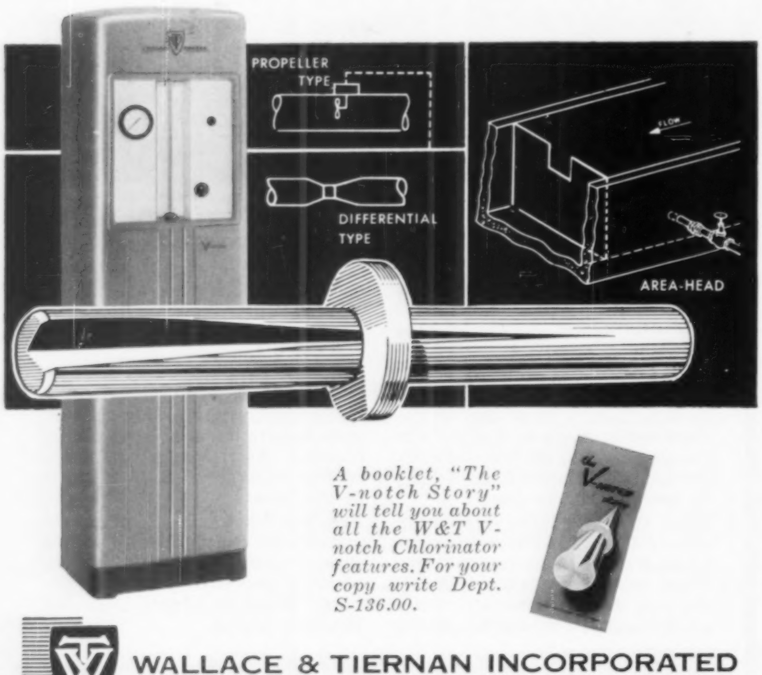
Lots of jobs are done better automatically. Changing chlorine feed rate is now one of them. With the V-notch...the straight line metering action of the plug through the ring makes automation simple.

Merely by adding, not adapting, a W&T V-notch Chlorinator can give you any degree of automatic control you want—step rate, start-stop, program, proportional, even residual control.

With a V-notch Chlorinator any signal from any primary metering device can control chlorine feed. So anyone can afford automation.

And, of course, the right plastics make the whole chlorinator chlorine-proof.



A booklet, "The V-notch Story" will tell you about all the W&T V-notch Chlorinator features. For your copy write Dept. S-136.00.

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has not changed since before their program went into effect.

The City of Detroit set up a testing procedure that simulated actual operating conditions. Each unit tested was mounted in a kitchen sink to which water was supplied at the rate of about two gallons per minute during grinding operations. Various leafy vegetable wastes and cooked bone were fed into the unit individually. The resultant ground material was caught and washed through a nest of sieves and checked for fineness of grind.

Such a procedure is typical of the testing approach used in establishing a list of approved garbage disposer manufacturers. Other cities, lacking test facilities, took information provided by disposer manufacturers and set up a performance standard, spelling out the degree to which all solid food waste must be ground.

Wording of Ordinance

What about the ordinance itself? How should it be worded?

There are several approaches. The best way to describe them is to give excerpts showing some alternative plans, covering all new construction.

Ordinance No. 148856, amending the Building Code of the City of Columbus, Ohio, states: ". . . Each dwelling unit shall, prior to occupation thereof for residence purposes, be equipped by the building permit applicant . . . with a properly installed mechanical garbage disposer . . ."

Ordinance No. 671 of the City of Aurora, Colorado, adopting by reference the Technical Plumbing Code of the Colorado State Department of Public Health, reads as follows: " . . . All dwellings and all other structures containing kitchens, constructed hereafter, shall provide a mechanically operated garbage grinder for each kitchen. Such garbage grinder shall be . . . of such construction and have such operation and characteristics that at least 40% of all material discharged from it shall pass a No. 8 sieve; at least 65% shall pass a No. 3 sieve; and 100% shall pass a ½" screen."

More than sixty cities are trying to be "garbage-free," according to a free booklet from In-Sink-Erator Mfg. Co., Racine, Wis. ◄◄

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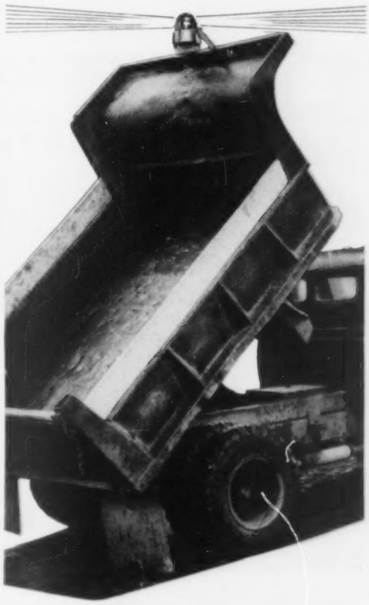

Let's face it! Some drivers can't see a yellow truck on a green embankment—in broad daylight. Fatigue, turnpike hypnosis, or whatever affects them, few drivers can miss the brilliant explosive flash of a Beacon Ray or Fire Ball, by day or night.

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A Review Of the National Committee On Urban Transportation

During the post war years, the impact of traffic congestion, inadequate service and rising transportation costs were brought into sharp focus for everyone living and doing business in urban areas. Most civic leaders were quick to recognize the need for decisive action and the possible consequences of urban stagnation.

Over twenty years ago, the Bureau of Public Roads and State Highway Departments set up joint survey programs to collect and maintain data concerning highways under state jurisdiction. No general program of this kind had been carried out in the cities and the urban areas.

A More Complex Problem

Because the urban problem is much more complex as well as different in many respects, the methods and techniques used in rural areas could not be transplanted for direct use in urban areas. Recognizing the urgent need for a parallel

Urban Transportation Administration Needs

Many proposals for improving urban transportation have been advanced, ranging from absolute prohibition of automobile traffic on city streets to great programs for creating new traffic and parking capacity. But no solution, whatever its direction, is possible until urban transportation is considered as a single problem, and dealt with through a balanced program.

A comprehensive approach is needed in several aspects. First, all modes of transport, and all types of facilities to serve them require consideration. Each urban area has definite available resources, and an individual future potential. Decisions must be made in the light of the problem, the resources, and the potential available, in such a way as to provide ultimate best efficiency. This is essentially the approach developed in the recently published guide manual of the National Committee on Urban Transportation, entitled "Better Transportation for Your City."—*Urban Transportation Administration,* 1959, *Yale University, New Haven, Conn.*

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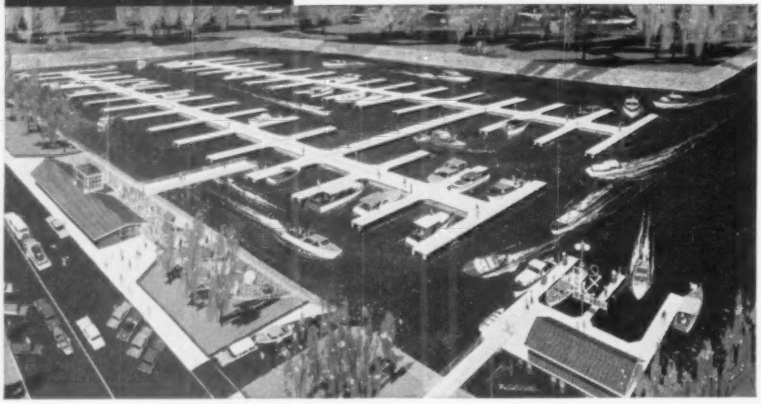

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program geared to the needs of cities and urban areas, city officials recommended that a national committee be formed to prepare the methods and procedures required.

The National Committee was organized by representatives of these six national organizations of public officials in May, 1954: International City Managers' Association, American Municipal Association, American Society of Planning Officials, Municipal Finance Officers Association, National Institute of Municipal Law Officers, and American Public Works Association.

The National Committee considered transit service an important element of the total problem and the American Transit Association has participated actively through an annual contribution of funds and staff assistance.

The Bureau of Public Roads joined the Committee shortly after it was organized and the Canadian Federation of Mayors and Municipalities and the National Association of County Officials also became members in 1956.

What It Has Produced

The first objective was the development of a manual of methods and procedures by which cities could undertake a complete fact-gathering program to help evaluate deficiencies, project future needs and develop realistic transportation plans. This was completed in 1956, and these seven pilot cities were selected: San Diego, Calif., Phoenix, Ariz., Albuquerque, N. M., Syracuse, N.Y., Detroit, Mich., Oak Park, Ill., and Pocatello, Idaho. From the field experience gained, the various manuals were refined and adjusted for publication in the form of a handbook called "Better Transportation for Your City" and a series of seventeen procedural manuals, all published through the Public Administration Service, 1313 East 60th St., Chicago, Ill.

"Better Transportation For Your City" is a guide designed for use by mayors, city managers, councilmen, county officials, transit management, state highway engineers and department heads.

The procedural manuals were prepared for use by technicians and field personnel in carrying out each of the detailed studies recommended.

Conducting this series of studies will probably entail some additional expenditures but under the provisions of the various highway acts, up to 1½% of the federal funds apportioned to the states are available for engineering and planning purposes. These funds are available to cities and local governments at the option of the respective state highway departments, subject to approval by the Bureau of Public Roads.

Final responsibility for initiating the program rests with the officials of local government. For example, the first origin-destination survey of the Phoenix Metropolitan Area was completed in 1947. Because of the very rapid increase in area population, a second O-D survey was initiated in 1957 as part of the National Committee pilot study program to determine what changes in travel patterns had taken place since 1947. Participating in this study were the Bureau of Public Roads, the State Highway Department, Maricopa County and the City of Phoenix. Substantial changes in travel desires in the Phoenix Metropolitan Area between 1947 and 1957 were indicated. ◄◄

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NEW PITMAN PELICAN™

Now your crewmen can work aloft with assurance of complete safety—they simply step into the Pelican's fiberglass bucket, press the easy-to-use controls, and sweep aloft in seconds! The rigid, non-conductive fiberglass boom stays put without "creep," yet changes location instantly, with finger-tip control and exact positioning.

Lightweight fiberglass bucket levels itself automatically, has a full 300 lb. capacity. Designed for use without outriggers. Boom revolves 360° in either direction, elevates to 75°, extends to full length simultaneously. Available in 28′, 32′ and 36′ ground-to-bucket heights; easily installed on most popular-sized trucks.

The Pelican costs even less—in initial investment and maintenance—than many old-fashioned powered aerial ladders. You owe it to yourself to get the facts!

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Fire and Explosion in Roseburg, Ore.

A truck containing two tons of dynamite and 4½ tons of a blasting agent, trade-named "Car-Prill" (a mixture of prilled ammonium nitrate, ground nut shells and diesel oil), exploded with great violence and devastated the downtown section of the quiet and peaceful city of Roseburg, Ore., on Friday, August 7, 1959, at about 1 a.m. The explosion, which was probably initiated by the intense heat from a nearby fire, killed 13 persons and injured more than 125 others. Property damage will probably exceed nine million dollars with most of the loss sustained in the areas adjacent to and including the principal business district of the city.

This hazardous cargo was being transported by the Pacific Powder Co. from its plant in Tenino, Wash., and was to be delivered to customers in the vicinity of Roseburg. It was a 1959 Ford, 2½-ton-van-type truck painted red, with cab and aluminum body. The rear end of the truck was enclosed by a canvas curtain. There was information that the truck was marked "Pacific Powder Company" on each side with letters said to be about 12 inches high, front, rear and sides reading "Explosives," with five-inch letters, 30 inches long. The truck and its load of 6½ tons of explosive products had been parked en route, for the night, on a city street, just a few feet from a building-materials warehouse, which subsequently caught fire. The fire department was fighting the warehouse building fire when, in a matter of less than ten minutes, the disastrous explosion occurred.

The Damage

A crater 52 feet in diameter and 20 feet deep gave mute evidence to the terrific force of the blast. Most of the buildings in the immediate twelve blocks were completely destroyed. Hundreds of other buildings in the community suffered extensive damage over a 50-block area, and glass breakage was reported as far as nine miles from the explosion. Tremors were reported from places as far away as 17 miles.

Adding to the havoc, fires soon appeared in numerous buildings in the surrounding area. These fires were apparently started by radiant heat and flaming debris scattered by the explosion. More than 45 buildings were involved. The conflagration was confined to a seven-block area through the combined efforts of the local fire department and fire companies from neighboring districts and nearby cities. The fire was brought under control in two hours.

The Roseburg Fire Department suffered from the blast. The Assistant Fire Chief, the two civilians who were helping him, and a police officer on traffic duty were among those instantly killed. A 1,000-gpm pumping engine was wrecked. The firemen operating another pumping engine were shocked and suffered ruptured ear drums. The Roseburg fire chief, who was under treatment for a heart condition, had

(Continued on page 239)

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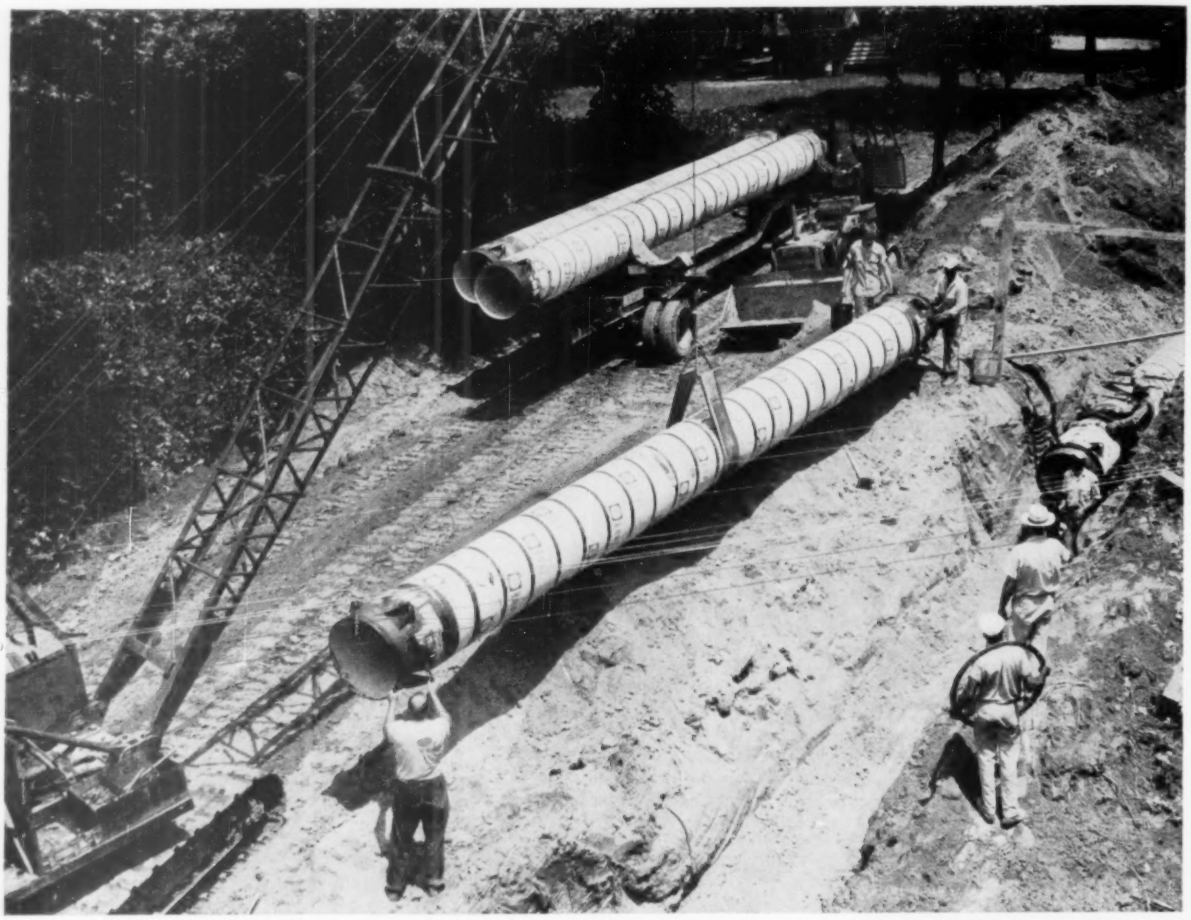

Atlanta, Georgia: To allow industrial and residential expansion in Fulton County, the city of Atlanta recently engineered this 8200' extension of the existing water supply main system. The line was laid by Arthur Pew Construction Co. of Atlanta as an addition to about a mile of water supply mains laid in 1957. Both sections are Dresser-Coupled throughout.

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ONE OF THE DRESSER INDUSTRIES ®

(Continued from page 237)

been unable to respond to the alarm.

The most important recommendation is the need for the enactment and cooperative enforcement at state and local levels of laws and regulations covering the storage, handling and transportation of explosives and blasting agents. Adoption of the National Board of Fire Underwriters' "Fire Prevention Code" is recommended as an overall regulation for broader fire prevention control of the storage and handling of various hazardous materials and devices.

Inspection programs conducted by local fire departments should include inquiries into the storage of explosives, blasting agents and hazardous chemicals in plants and warehouses.

Firemen training programs should cover fire problems involving explosives and blasting agents. Such emergencies can present considerable risk to fire department personnel. In the absence of explosives, fires involving blasting agents may be fought with copious quantities of water when such fires are attacked in the early stages. However, if explosives are present in the same fire, the immediate area should be considered unsafe and promptly evacuated; firemen should seek protective cover and be prepared to handle any additional fire problems that might develop as a result of such an explosion. Subsequent cleanup and salvage operations of such hazardous and contaminated materials should be conducted with due consideration for their safe disposal.

Fire vehicles in Roseburg were equipped with three-way radio transmitter-receivers. The radio system was not disrupted by the explosion, but about 20 minutes after the blast, the power company cut off power in the affected area, and this put the main transmitter out of service.

An auxiliary electric power generator is recommended for fire department base radio stations in order to provide continuous communication during power failure or shutdowns.

The facts are fully presented in a 24-page report by the National Board of Fire Underwriters, 85 John St., New York 38. ◄◄

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without destroying beneficial bacteria

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NEW INHIBITORY FACTOR—Hundreds of tests have demonstrated that R.S.C. is extremely effective in killing Psychodae which have shown high degree of resistance to DDT, Methoxychlor, Lindane, Chlordane, Dieldrin, Aldrin, Malathion and other insecticides.

This is accomplished by an inhibitory factor which renders a hitherto resistant fly susceptible to the insecticides in the R.S.C. formula. Field tests in such widely separated areas as Illinois, Texas, Florida have shown that use of R.S.C. reduces filter fly population to practically nil.

EASY TO USE—Dose with R.S.C. liquid concentrate through primary effluent and spray surrounding surfaces to kill flying adults.

SAFE, ECONOMICAL—R.S.C. is registered by the United States Department of Agriculture for control of Psychoda flies. When used according to directions, R.S.C. is safe, economical, and the most effective method of filter fly control to date.

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CHICAGO 14, ILLINOIS

New Jersey's Governor Meyner, left center, learns about Fair Lawn's industrial park from borough officials.

This park is already paying 13% of the borough taxes, and eventually will pay 20%.

What Makes A Good Industrial Park

Fair Lawn, N. J., develops an area that is harmonious with good residential conditions and that eventually will carry 20% of the total tax load

By **W. T. WILLIAMSON**
Borough Treasurer
Fair Lawn, N. J.

In Fair Lawn, the phrase "industrial park" definitely *does not* mean just any vacant lot of one acre or more. Nor does it refer to a conglomerate array of buildings that are the result of a fast real estate development with little or no thought of other factors.

In this borough, it *does* mean a carefully planned area, convenient to industry and attractive to the public. It means industries that harmonize with a residential community and that participate in community activities.

Early Problems

The early history of this tract of 190 acres was anything but encouraging. After a builder was denied approval for garden apartments, the property was purchased by the Frank A. McBride Co., plumbing and heating contractors. Their first efforts to obtain industrial zoning resulted in the usual clamor that Fair Lawn is a residential community and "we want it kept that way regardless of taxes." Several prominent officials threatened to move out of town if industry were permitted. (These people later claimed credit for sponsoring such a wonderful development).

The Planning Board finally agreed to zone a 40-acre tract as a trial balloon. The first building was a warehouse for Lederle Laboratories. It was immediately involved in a taxpayers' suit because of alleged low assessment.

Finally the entire tract was zoned for light industry and the McBride Company employed James M. Rice, trained in the management field, to develop the tract industrially. The first customer was Eastman Kodak, which purchased a ten-acre tract to house its 8-mm color - developing operation in the metropolitan area. This was followed by the completion in 1955 of plants by Sandvik Steel, Brioschi, Fisher Scientific, and Fairbanks-Morse. Each firm that considered moving to Fair Lawn was checked thoroughly for noise, smoke, odor, and other factors that would be detrimental to the area.

The principals of every company interested in the park visited the municipal offices to discuss with the borough manager and the assessor the methods of assessing and the various services provided to taxpayers. They were very concerned with the proficiency of the local government as to structure, the quality of the elected officials, and the ability of borough personnel. Next the building plans were submitted to the Planning Board for approval and to the Borough Council for final consideration.

By this stage of the operation all parties were well acquainted with each other personally and were agreed that Fair Lawn was an acceptable place to work in and that the industry was suited for the park. This phase of community relations has been important in acceptance of the industrial growth. The people of the borough were familiar with every new customer and knew the details of operation of the plant and its effects on the community before any construction was started.

As the park grew, not only did the various agencies of the borough have a voice in the acceptance of each new firm, but the existing industries had a "say-so" in the consideration of the new plant. Their concern was not in the competition of similar products but in too heavy a drain on the labor market for certain trades and professions.

The zoning laws of Fair Lawn have the usual restrictions on light industry and provide that no more than 50% of the area be used for building purposes. The parking requirements are one parking berth for each 400 square feet of gross floor area or for each three workers,

whichever is less. The height restrictions are limited to two stories, not to exceed 35 feet, with the 165-foot tower of National Biscuit being the only variance. In addition, the McBride Company has included requirements on the maintenance of the landscaping and buildings, with penalties.

Rapid Growth

The success of the park is proven by the rapid development of the tract and the type of concerns that have moved in. In addition to those previously mentioned, 13 new tenants have moved, or are in the process of moving into the area. These include such diverse industries as publishers, lithographers, foods, electronics, a warehouse, and a utility station. No concessions have been granted to any industry in taxes or any other service of the borough. The developers have installed all utilities, roads and improvements; and have made no undue demands on regular service.

For traffic-control purposes, the Police Department spends about four man-hours each work day in the park. Of particular interest is the fact that Fair Lawn still has a Fire Department that is 100% volunteer and has a Class C insurance rating. The points needed to step up to the next higher class involves a fire alarm system and other factors not connected with personnel.

The 1960 assessed valuation of the industrial park is $6,233,760 and the total assessed valuation of the entire borough is $48,708,108. The tax rate is $11.38 and the county equalization rate is 22.93%. These figures show that 5.5% of the land in the borough provides about 13% of the taxes and requires less services than other areas in the community. When the park is fully developed, it will pay close to 20% of the tax load.

One notable element in the development is the fact that there are other areas nearer to New York City that are competing with Fair Lawn for industries and have a lower tax base. We give much credit to the community-relations aspect as an attraction for good industries. We feel that industry wants to pay its fair share of taxes and is just as interested in being a part of a well-rounded community.

The real story of what the industrial park means to our community is found in the current activities of the industrial leaders who:

1. Present an annual trophy to the industry who has the best groomed lands and buildings,

2. Have developed an Industrial Community Chest to control solicitations and to supplement the local chest,

3. Have created an "on-the-job" training program in cooperation with the school system,

4. Conduct a one-day orientation program for high school teachers in September of each year,

5. Sponsor a training program to interest industrial leaders in govenment on the local, county and state level,

6. Put on a two-day industrial exhibit in the high school gym each year for the people of the community,

7. Conduct periodic tours and hold open house for interested groups (the open house of National Biscuit attracted at least 25,000 people in a two-day period),

8. Provide speakers for various clubs in the community, and

9. Meet monthly to discuss mutual problems and those concerning the borough.

In addition to these contributions to community living, the industrial leaders and many of the workers are very active in civic and service clubs and lend their talents in such activities as Boy Scouts. We feel that Fair Lawn Industrial Park is an asset in every respect and represents the proper role of industry in community relations. ◄◄

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Shopping Malls Prove to Be Good for Toledo and Kalamazoo

Downtown malls increase business and make shopping a pleasure, two city managers agreed recently at the University of Michigan.

Clarence Elliott, of Kalamazoo, and Russel W. Rink, of Toledo, described mall programs in their cities at the 12th annual Management Institute, attended by 90 Michigan city managers.

Toledo began an experimental mall project to give businessmen and citizens an insight into what a mall is and what it could do, Mr. Rink explained. The Toledo mall, installed for 100 days, was never intended to be permanent. It was started one evening and completed by the next night.

The Downtown Toledo Associates, a group including businessmen and professionals, contributed a great deal of time to the project as did the City-County Planning Commission. Toledo spent $20,000 on the project, with the rest paid by the DTA and other groups.

Four blocks in the downtown area comprised the experimental mall. Pedestrians were able to go from one side of the street to the other without waiting. Traffic was routed around the mall.

The streets were painted and flowerbeds, children's recreation areas and benches were installed at various places. One of the outstanding results was the atmosphere of leisure that prevailed. People slowed down and enjoyed shopping. The Muzak organization piped in music and the Toledo Museum contributed a number of statues.

The recreation areas were staffed with supervisors from the Recreation Department so that mothers could leave their children there and continue shopping. The Chamber of Commerce staffed an information booth.

One of the by-products of the experiment was widespread publicity, Mr. Rink reported. The city won an award from the American Municipal Association for the finest public relations project of the year. Many officials from other cities visited the mall.

A $100,000 permanent mall project has been discussed, Mr. Rink explained. The cost would include tearing up sidewalks and streets, installing radiant heating to take care of snow, and other features.

Manager Elliott estimated that business in Kalamazoo had increased 23% since the installation of its permanent mall. About 18 permits have been taken out for remodeling downtown businesses. The present real estate evaluations have more than made up for the cost to the city.

He agreed with Mr. Rink that more leisurely shopping has resulted from the project. Store advertising and window displays can be more easily seen now. A side benefit, in addition to the number of people from other communities who have visited the mall, is that Kalamazoo now has more prospects of new industry than it has had in the last 50 years.

Mr. Elliott said that in 1956 real estate value in downtown Kalamazoo had dropped by 10% over the previous few years and that there were a few vacant stores in the central business district. In two weeks the City Commission and the downtown merchants raised $20,000 for the mall project, with 95% of the businessmen contributing.

The mall, Mr. Elliott emphasized, is only the frosting on the cake. A complete redevelopment program has been planned for downtown Kalamazoo. He feels it important to have a master plan for the whole area before undertaking a mall program.

The institute, held in conjunction with the annual midwinter meeting of the Michigan Chapter of the International City Managers' Association, is sponsored by the U-M Institute of Public Administration in cooperation with the Michigan Municipal League and the ICMA Michigan Chapter. ◄◄

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The International Fire Administration Institute is a new organization founded by the International Association of Fire Chiefs at 232 Madison Avenue, New York 16, N. Y. A brochure, describing the Institute's program and activities, emphasizes that efficient administration of the fire service saves lives, saves property, saves loss of production, and conserves capital.

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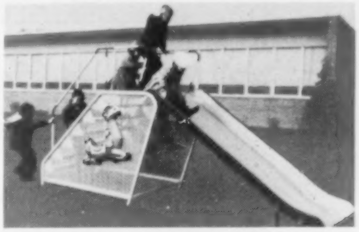

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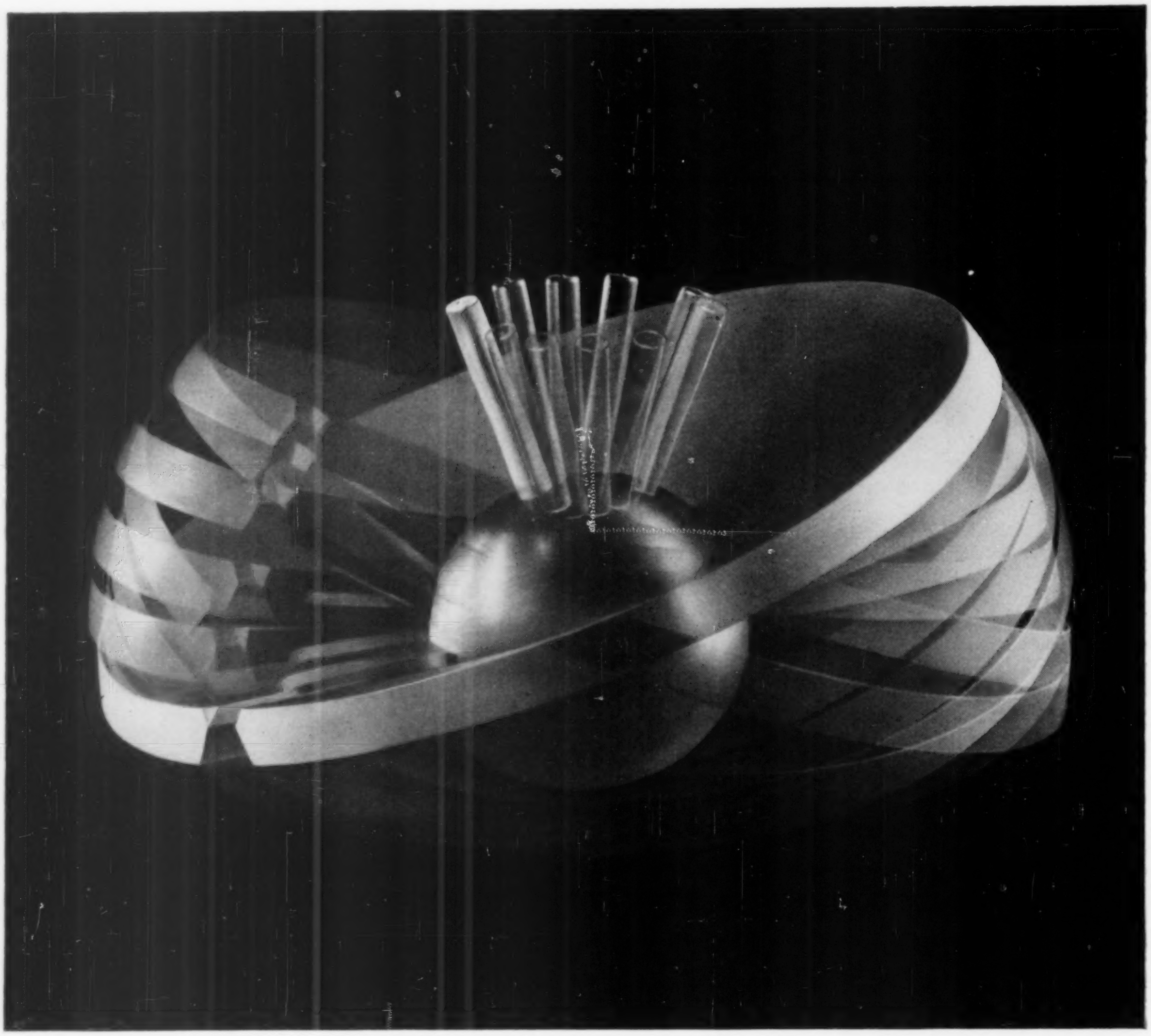

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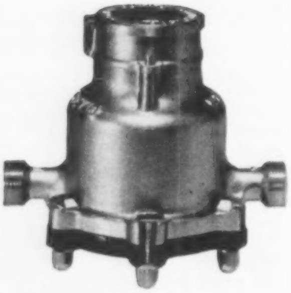

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ZONING AND PLANNING NOTES

Edited by NORMAN WILLIAMS, Jr.

New Developments In Acreage Zoning

NEW YORK. *Levitt* v. *Incorporated Village of Sands Point,* 6 New York (2d) 269, 160 North Eastern (2d) 501 (Court of Appeals (highest court), July 8, 1959).

CONNECTICUT. *Senior* v. *Zoning Commission of Town of New Canaan,* 153 Atlantic (2d) 415 (Supreme Court of Errors (highest court), June 23, 1959).

COLORADO. *Holly Development, Inc.* v. *Board of County Commissioners of County of Arapahoe,* 342 Pacific (2d) 1032 (Supreme (highest) Court, August 24, 1959).

In the *Sands Point* case, a substantial area was upgraded by rezoning to a two-acre district. Sands Point—a small residential village located at the end of a peninsula jutting out from the northern coast of Long Island—has substantial vacant land, which is rolling and partly wooded. The two-acre regulation was challenged as confiscatory and unconstitutional.

The two-acre restriction was upheld in a brief opinion, with little more than a simple statement that this regulation appeared reasonable under the circumstances, with a reference to the village's "character" and isolated location. In reciting the presumption of validity of a rezoning regulation, the Court went out of its way to emphasize that this presumption "is not changed by the fact that an *amendment* to a zoning ordinance is here involved." The Court, however, disagreed with the holding by the Appellate Division that the plaintiff should have applied for a variance, as a prerequisite to raising the issue of confiscation under this proceeding—for it was pointed out that a variance would be a most inappropriate method for a change in the zoning regulations covering an area of more than 100 acres.

In the *New Canaan* case, the entire northern section of the town, involving over 4,000 acres of hilly and wooded countryside, was rezoned from a two-acre district to a four-acre district; and this rezoning was challenged as unreasonable and arbitrary by the owner of some 400 acres in this area. The lower court decision invalidating the four-acre zoning was reversed by the highest Connecticut court.

In the lower court the town argued that the more restrictive acreage zoning was justified on several grounds—i.e., that it would provide adequate space for private sewage disposal by septic tanks, and so reduce water pollution; that it would reduce flood danger in the lower end of the town by 14%, by limiting the run-off after heavy rains; and that it would limit traffic hazards and avoid the necessity for extensive rebuilding of roads. After extensive discussion of the criteria for judging a zoning case, the Court held that the arguments given here were not convincing. Two acres was held to provide plenty of room for a private sewage disposal system; a proper size drain pipe could carry off the increased run-off of water adequately; and a rural atmosphere could be sufficiently preserved by a two-acre regulation. Moreover, the Court was concerned with the effect of severe restrictions on further migration into the town.

> "In the case at bar, the reasons advanced by the commission do not justify the action taken. The hazard to health is not realistic. With the space available on a two-acre site, a well-designed and constructed private disposal system should function adequately. Bogart and Childs' report, Page 8.
>
> "The reduction of flood possibilities is without foundation as a proper size drain pipe would carry off the increased runoff of water adequately. Bogart and Childs' report by letter of July 25, 1956. Page 1 (d).
>
> "Reasons three and four of the commission are also without foundation. A two-acre tract is a considerable portion of land. With a two-acre zone, a rural atmosphere cannot help but be preserved. If the court were to permit an upgrade from a two-acre zone to a four-acre zone on the reasons given by the commission, then it would not be unreasonable to expect that zones could be increased from four acres to eight acres to 16 acres ad infinitum.
>
> "Our country is in a dynamic economy with tremendous capacity for growth. Our population is increasing. Our state is a most desirable place to live. Unreasonable and arbitrary measures would prevent our descendants and (of) our good neighbors from finding a place to live within our own state. This is not good."

In the appellate opinion the Court stated first that

> ". . . nothing in the proposed upgrading appears inconsistent with the provisions of Section 8-2 (i.e., the zoning enabling act) setting forth the considerations which the commission must have before it in enacting zoning regulations."

The Court also noted that upgrading in such a semi-rural area is "a type of regulation generally upheld." The plaintiff had volunteered the information that New Canaan had the highest per capita income than any town in the country, and the Court took note of this by indicating that this was "certainly a proper fact for it (i.e., the town) to consider in deciding whether the establishment of a superior residential district would be the most appropriate use of this unspoiled area." Since the land in the town zoned for smaller lot sizes provided enough room for several thousand additional homes, the Court held that there was no ground for saying that the upgrading in question would limit ownership of new homes in the town to the wealthy.

> "As shown by the record, after the amendment of the regulations there was left for residences, in addition to 624 sites in the four-acre zone, 1,879 two-acre sites, 753 one-acre sites, 87 half-acre sites, 296 sites in Zone A, and 798 sites in Zone B. Having in mind New Canaan's present population of under 16,000, we cannot say, as the plaintiff infers, that the effect of the upgrading of the zone is to limit ownership of new homes in the town to the wealthy."

The lower court opinion in the *New Canaan* case is almost unique among American opinions on acreage zoning, because the Court went beyond generalities and examined in detail the arguments used to uphold the four-acre zoning—the need for space around septic tanks, the effect on the run-off of rain during floods, and the effect on the street system. It is therefore particularly disappointing that the appellate opinion reverted to vague generalities. The validity of acreage zoning is perhaps the most difficult constitutional problem in zoning, requiring a sensitive appreciation of all the factors involved, and hard, rigorous thinking. True to the prevailing tradition in acreage zoning cases, the Connecticut Court missed this opportunity completely.

In the Colorado case, during a period of several years, an area undergoing residential development was zoned for a minimum of 2½ acres per house, and a substantial amount of development took place in accordance with these standards. Subsequently, the County Planning Commission approved a sub-division with lot sizes only half as large; and this rezoning was challenged by nearby property owners on several grounds—that the notice of public hearing was insufficient, that no zoning map had been prepared, and that the rezoning was arbitrary and capricious. The Court held that the rezoning was invalid on all three grounds stated.

A surprising number of smaller (and some larger) communities have indulged in such sloppy zoning practices as failing to prepare (or maintain) zoning maps. This case provides a striking example:

> "In the instant case it is conceded that no zoning map was prepared, filed or adopted as part of the amended zoning resolution of 1956. This is in spite of the defendant's solemn statement in the zoning amendment to the contrary. This omission is admittedly not caused by an oversight, but because no one got around to it due to the illness of the cartographer."

Required Off-Street Parking for Churches

NEW JERSEY. *Allendale Congregation of Jehovah's Witnesses* v. *Grosman,* 152 Atlantic (2d) 569 (Supreme (highest) Court, June 30, 1959).

In this case a group of Jehovah's Witnesses proposed to build a meeting hall on a lot of about one-half acre, near a curve on a major street. The application was turned down, with several grounds cited—that a church in such a location would create "exceptional risk of traffic congestion and public safety," that the building as designed would be markedly incongruous in the neighborhood, and that the proposed off-street parking spaces did not satisfy the parking requirements in the ordinance. The local zoning ordinance required one parking space for each

(Continued on page 247)

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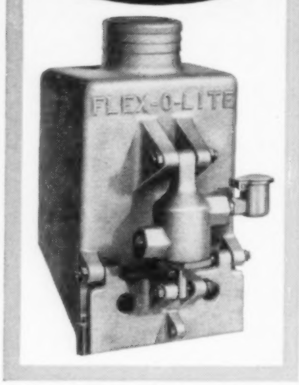

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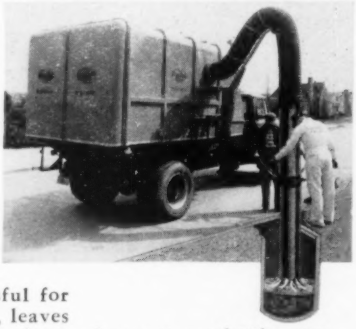

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(Continued from page 245)

three seats in many types of places of public assembly, including churches, theatres, restaurants, and hospitals, and 200 square feet was specified as the minimum size of a parking space (with additional space to be provided for driveways). There was no allegation that the refusal involved any discrimination against Jehovah's Witnesses. The latter challenged this denial, particularly on the off-street parking provisions, as an encroachment on freedom of religion. The Court rejected this contention completely.

> "We consider this contention to be without merit. The off-street parking requirements are made indiscriminately applicable to all buildings where substantial numbers of people are likely to gather via private motor vehicles and are well designed to promote the public safety and general welfare by lessening 'congestion in the streets.' They do not restrict the plaintiff's freedom of worship and assembly at its present quarters or at any suitable quarters in the AA residential zone or in any of the other zones in the borough or even at the plaintiff's relatively small lot on Hillside Avenue, if its plans are altered to reduce its proposed seating capacity and increase its proposed off-street parking facilities so as to comply with the terms of the amendatory ordinance. On the record before us we are not at all at liberty to say that the requirements have not been imposed in good faith and for the public interest or that they are unnecessary or excessive or that they are not substantially related to the promotion of the public safety and general welfare; they appear to come well within the principles expressed in cases which have heretofore held that property used for church purposes, along with property used for other purposes, may be lawfully subjected to reasonable zoning restrictions."

This is one of the most explicit opinions so far on the validity of off-street parking requirements.

Restrictive Covenants—Rights in Private Lake

NEW JERSEY. *Hammett* v. *Rosensohn*, 140 Atlantic (2d) 377 (Supreme (highest) Court, April 3, 1958).

Around 1930 two adjoining parcels of land in a rural section of northern New Jersey were developed with large homes, and a 40-acre pond was divided between the two tracts. A subsequent purchaser of one tract planned to subdivide part of his tract, to fill in part of the lake, and to build a public beach along the shore of the pond; and work was actually started in chopping down trees in the shore area. The owner of the neighboring tract brought an action on a restrictive covenant for an injunction against the proposed developments.

In the opinion, the Court held first that, under the applicable restrictive covenants, both families had a right to continuance of the pond in its natural state. The Court held therefore that the proposed plan, to develop what would in effect be a public beach along the pond, was improper. However, three judges dissented in part, arguing that the area proposed to be filled was so small as not to matter.

Height Regulations for Corner Lot—Measurement Above Established Grade

NEW YORK. *De Marco* v. *Fitzgerald*, 190 New York Supplement (2d) 939 (Supreme (lower) Court, August 12, 1959).

In this case a building permit was issued for a single-family house on a corner lot located on sloping ground. After the house was practically completed, the permit was revoked, on the ground that the building violated the legal height restrictions above established grade, if such height were measured from grade of the lower of the two adjoining streets. It was agreed that the building would be legal if the height were measured from the grade of the other adjoining street.

In the opinion the Court pointed out that the zoning regulations provided that the permitted height should be measured "from the established grade of a street," and it was decided that under this language the developer was within his rights in choosing either street for the purposes of such measurement.

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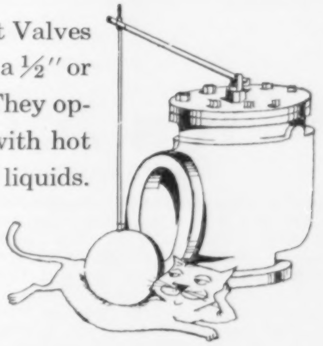

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LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Airport Lease Not Exclusive Right

In action by flying club which leased airport from city where later city leased portion of airport to third party, held contract would not be construed as granting exclusive franchise to flying club. *Southwest Texas & International Flying Club* v. *City of Del Rio*, 324 S.W.2d 40 (Tex. Civ. App., April 8, 1959)

Annexation—Contract to Postpone Upheld

Where city agreed to not annex area for 3-year period on consideration that election to incorporate such area would be called off, held city estopped from annexing territory during agreed period. *Pitzer* v. *City of Abilene*, 323 S.W.2d 623 (Tex. Civ. App., April 10, 1959)

Assessments—City Must Pay to Water District

In action by water improvement district to recover assessments levied against city property, held assessment did not constitute "tax" within provision exempting municipal property from taxes and hence city liable to district. *Wichita County Water Imp. Dist.* v. *City of Wichita Falls*, 323 S.W.2d 298 (Tex. Civ. App., March 27, 1959)

Boats—City Registration Ordinance Invalid

In proceeding concerning conviction of violation of boat registration ordinance, held city had no implied power to enforce safety regulations by boat registration and licensing ordinance. *City of Madison* v. *Tolzmann*, 97 N.W.2d 513 (Wis., June 26, 1959)

Building Permits—Restrictive Covenants Will Not Revoke

In building permit case under ordinance prohibiting issuance of permits which would result in violation of recorded restrictive covenants, held ordinance invalid as delegation of legislative power. *State* v. *Eckhardt*, 322 S.W.2d 903 (Mo., April 13, 1959)

City Funds—Use for Charity Valid

In action by city for declaration of right to use trust funds set aside for harbor development to construct building to be leased to charitable institution for promotion of welfare of persons engaged in harbor and commerce, held such expenditure would be permitted. *People* v. *City of Long Beach*, 338 P.2d 177 (Cal., April 22, 1959)

Condemnation By City Upheld

In condemnation proceedings, held city had right to condemn, for proposed river reservoir, state school land situated outside city limits but not devoted to or reserved for public use. *City of Seattle* v. *State*, 338 P.2d 126 (Wash., April 23, 1959)

Contractor Cannot Recover Cost of Extras

In proceeding against town to recover cost of work which contractor did pursuant to decision of architect that contract to erect school called for such work, held contractor not entitled to payment. *G. L. Rugo & Sons, Inc.* v. *Town of Lexington* 157 N.E.2d 521 (Mass., April 2, 1959)

Highways—State May Build Without City's Approval

Where State Director of Highways declared necessity for relocating and improving a highway, including construction of new bridge over river wholly within city, which had refused to consent to improvement, held construction ordered. *City of Lakewood* v. *Thormyer*, 157 N.E.2d 431 (Ohio App., Cuyahoga Cty., April 16, 1959)

Parking—Car Damaged on City Lot

In action concerning automobile damaged while parked in municipally-owned parking garage, held such was proprietary function and city liable for damage caused by negligence of its employees. *Cutnaw* v. *City of Columbus*, 157 N.E.2d 373 (Ohio App., Franklin Cty., October 21, 1958)

(Continued on page 251)

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the #1 PLASTIC PIPE

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#1 FOR WATER SERVICE LINES

- Easy to join
  Costs 50-75% less installed than metal pipe
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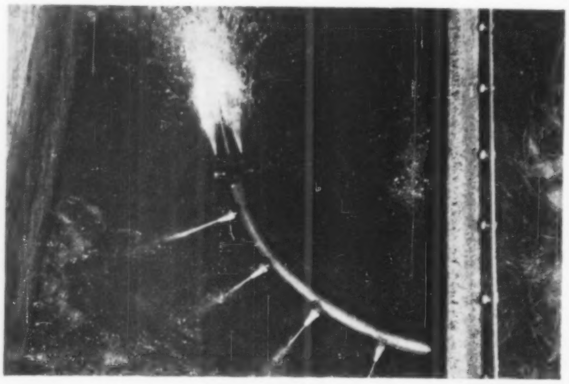
THE NEW S-TYPE MODEL 58 PALMER FILTER BED AGITATING UNIT

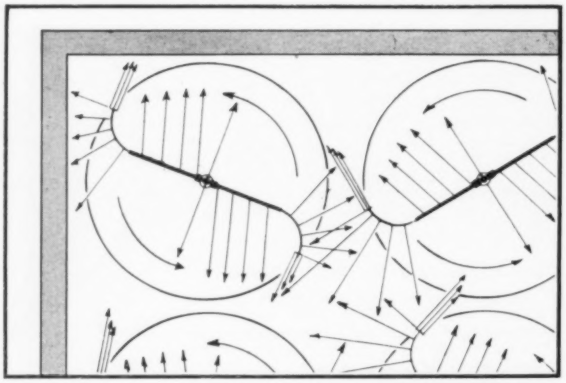
NOW you can have even INCREASED EFFICIENCY in filter bed washing from the original developer of the PALMER FILTER BED AGITATOR UNIT used in thousands of filter installations here and abroad.

Simplicity in design and operation plus lowest possible maintenance cost has always been our main keynote.

Now we can conservatively promise a 25-30% increase in filter cleaning efficiency with the same inherent features proven by 20 years of constant service. Operators said it couldn't be done but the diagram and picture below will show you it has been accomplished.



Portion of an S-Type Filter Arm in actual service.



New S-Type Filter Arms double the cleaning action.

The new S-TYPE Unit with Curved Ends and Advanced and Trailing Nozzles now produces 4 impulses per revolution to each CORNER and VOID area as compared to 2 for the old "Straight Arm" unit.

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Write Us for Information on the New S-TYPE and Adaptation of Your Old "Straight Arm" Type Units.

PALMER Filter Equipment Co.
822 East 8th Street, Erie, Pa. Ph. GL 4-3901

(Continued from page 249)

Parks—Sale of Property Upheld

Where city purchased tract for park purposes and deed to city contained no restrictions governing use of land and later city resold portion of tract not needed for park purposes, held resale valid. *Newell* v. *City of Kenosha,* 96 N.W.2d 845 (Wis., June 2, 1959)

Sidewalks—Fall on Ice—Abutter Not Liable

In action for injuries sustained in fall on icy sidewalk where ordinance put duty on lot owner to clear sidewalks, held abutter not liable where no notice of dangerous condition was given him *Stump* v. *Stransky,* 95 N.W.2d 691 (Neb. April 10, 1959)

Sidewalks—Pedestrian Killed—City Liable

In action for wrongful death of decedent who was killed when canopy over sidewalk fell and crushed him, held since his life expectancy was 18 years and he suffered extreme pain prior to death $5,000 damages was grossly inadequate. *City of Corinth* v. *Gilmore,* 110 So.2d 606 (Miss., April 6, 1959)

Subdivisions—City Compelled to Approve Plat

Where subdivider complied with requirements concerning plat of new development and there was no ordinance prescribing further conditions precedent to approval of plat, held town board must approve and accept the plat as submitted. *Knutson* v. *State,* 157 N.E.2d 469 (Ind., April 7, 1959)

Substandard Buildings—Lien For Razing Upheld

In action by landowners seeking relief against lien imposed on realty for cost of razing buildings which were found to be unsafe, held lien in amount of $1,500 was reasonable. *Oosterwyk* v. *City of Milwaukee,* 96 N.W.2d 372 (Wis., May 5, 1959)

Taxation—Personal Property Tax On Auto Dealer Upheld

In proceeding to review denial of automobile dealer's application to reduce valuation of personal property and for relief against wrongful assessment, held method of assessment was valid. *Cooley Chevrolet Company* v. *Town of West Haven,* 148 A.2d 327 (Conn., Feb. 2, 1959)

Tort Liability—Child Burned By Flare Pots—City Not Liable

In action against city for injuries sustained by child when her clothing caught fire from flare pot used as warning of street construction, held city not liable. *Ritter* v. *City of Baltimore,* 150 A.2d 260 (Md., April 14, 1959)

Tort Liability—Injury in Crowd—City Not Liable

In action for injuries sustained allegedly not result of plaintiff's slipping but solely due to failure of guards to restrain crowd which pinned her in and pushed her down, held city not liable. *Patterson* v. *City of New York,* 184 N. Y. S.2d 685 (N. Y. Sup. Ct., App. Div., April 14, 1959).

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Darling-Pelton butterfly valves are new in both principle and performance. They offer you new advantages!

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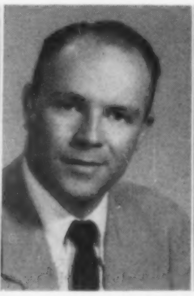
RECENT CITY MANAGER APPOINTMENTS

K. D. Morrison
Buena Park, Calif.

George C. Merkel
Middletown Bor., Pa.

Dan Mize
Mexia, Texas

John L. Young
Safety Harbor, Fla.



Joe M. Lacy
Grand Junction, Colo.

Frank R. Smiley
Springfield, Ore.

Raymond F. Barth, manager of Rio Vista, Calif., has been appointed manager of Mascoutah, Ill., succeeding Chester F. Williams, who is now the manager of Centralia, Ill.

Charles A. Brown, administrative assistant in Lodi, Calif., has been appointed as the new manager of Sausalito, Calif., succeeding D. A. Duerr. Mr. Brown was previously administrative assistant to the director of public works of Berkeley, Calif.

Harold R. Cheek, has recently been appointed manager of High Point, N. C., succeeding T. E. Hinson who is retiring. Mr. Cheek was previously manager of Springfield, Ohio, Niagara Falls, N. Y., Lexington, Ky., Plymouth, Mich., and Big Stone Gap, Va. He served as vice-president of ICMA in 1953.

Raymond E. Doran, Jr., manager of Concord, Calif., has been appointed manager of Hayward, Calif., succeeding S. Douglas Smith who has returned to his previous position as manager of Pacific Telephone and Telegraph in Bakersfield. Mr. Doran was previously administrative assistant in Antioch, Calif.

Gilbert W. Fairholm, administrative assistant to the manager of Ogden, Utah, was recently appointed the first city manager of Layton, Utah. Mr. Fairholm, was previously assistant city manager of Orem, Utah.

L. D. Fisher, an employee of a petroleum company in South America, has been appointed manager of Anadarko, Okla., succeeding Joe E. Parris who is now employed by the Western Farmers Electric Co-op. Mr. Fisher was previously employed by Anadarko.

John Griffin, administrative assistant in Glencoe, Ill., for the past 3½ years was recently appointed city manager of Madeira, Ohio, succeeding Raymond Cox.

Woodward M. Hampton, assistant manager of Miami, Fla., has been appointed manager of North Miami, Fla., succeeding Robert V. Youkey, now manager of Lakeland, Fla.

Raymond Hebert, formerly city engineer of the city of Seven Islands, Quebec, is the new manager of that city succeeding Gerard LePage, who has resigned to enter private business.

Frank Douglas Hequembourg, Jr., an engineer, has been appointed manager of Charleston, Mo., succeeding Clyde E. Swank.

Gene Higgins, assistant to the manager of Alamogorda, N. M., was recently appointed manager of Las Cruces, N. M., succeeding J. A. Fleming.

Donald R. Judkins, mayor of Largo, Fla., has been appointed manager of that city, succeeding Bazel E. Crowe, now manager of Key West, Fla. Mr. Judkins had previously served as manager of Largo, Fla.

James L. Juhl, administrative assistant in Huntington Woods, Mich., was recently appointed manager of Durand, Mich., succeeding Boyd K. Benedict. Mr. Juhl was also administrative assistant in Birmingham, Mich.

Roy A. Kane, formerly manager of Conway, N. H., has been appointed as manager of Berwick, Me., succeeding Paul J. Flynn, now manager of Mansfield, Mass. Mr. Kane has also served as manager of Bethel, Vt.

Joe M. Lacy, for four years assistant manager of Englewood, Colo., has been appointed manager of Grand Junction, Colo., succeeding R. E. Cheever.

Walter E. Lawrence, formerly manager of Saugus, Mass., for four years, has been recently appointed as the new manager of Provincetown, Mass., succeeding James V. Coyne, now staff representative for the Public Administration Service, Chicago, Ill. Mr. Lawrence formerly served as mayor of Medford, Mass.

Donald Mackley, service director of Delaware, Ohio, has been recently appointed manager of that city succeeding Roger W. Stilwell, who is the new manager of Springfield, Ore.

Selden J. Martin, manager of St. Albans, Me., for six years, is now manager of Pittsfield, Me., succeeding O. Lionel Pomroy, now manager of Brewer.

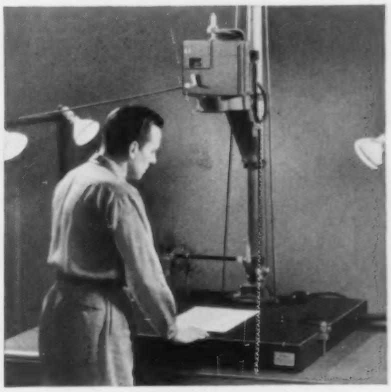
(Continued on page 255)

Miami's New Manager

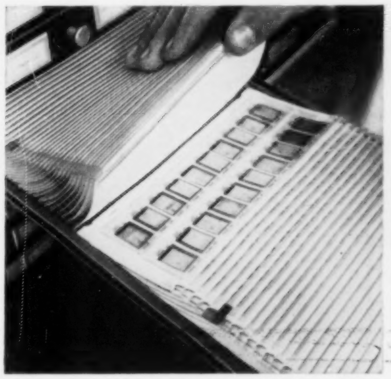
Melvin Reese (center), Miami's new city manager, is given a warm welcome by two of his bosses after being sworn in. At left is Mayor Robert King High and at right is Henry Balaban, city commissioner. Mr. Reese comes to Miami from Montgomery County, Md., where he served as county manager of Washington, D. C.'s largest suburb.

"Expect to save $75,000 a year with Recordak microfilming!"

Mr. Frank H. Marks, Clerk of the Circuit Court, Broward County, Florida, reports "We are going to keep records of deeds, mortgages, similar documents on microfilm instead of in costly volumes . . . expect this to give our taxpayers better service at a saving of $75,000 a year."

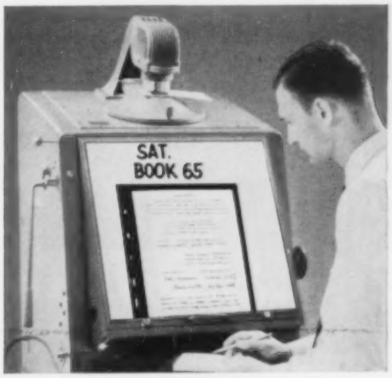


Each day, approximately 1,300 pages of incoming documents will be microfilmed. Older records already are being photographed.



Film records are then placed in visible-index jackets, which are inserted in an 11 x 24 tray. Each tray replaces 3 bulky volumes.

Two film cabinets hold 26 trays—close to 50,000 pages of records—and replace all the volumes shown in this illustration!



Public's response is excellent. Property records can be checked in Recordak Film Readers with little or no help from office personnel.

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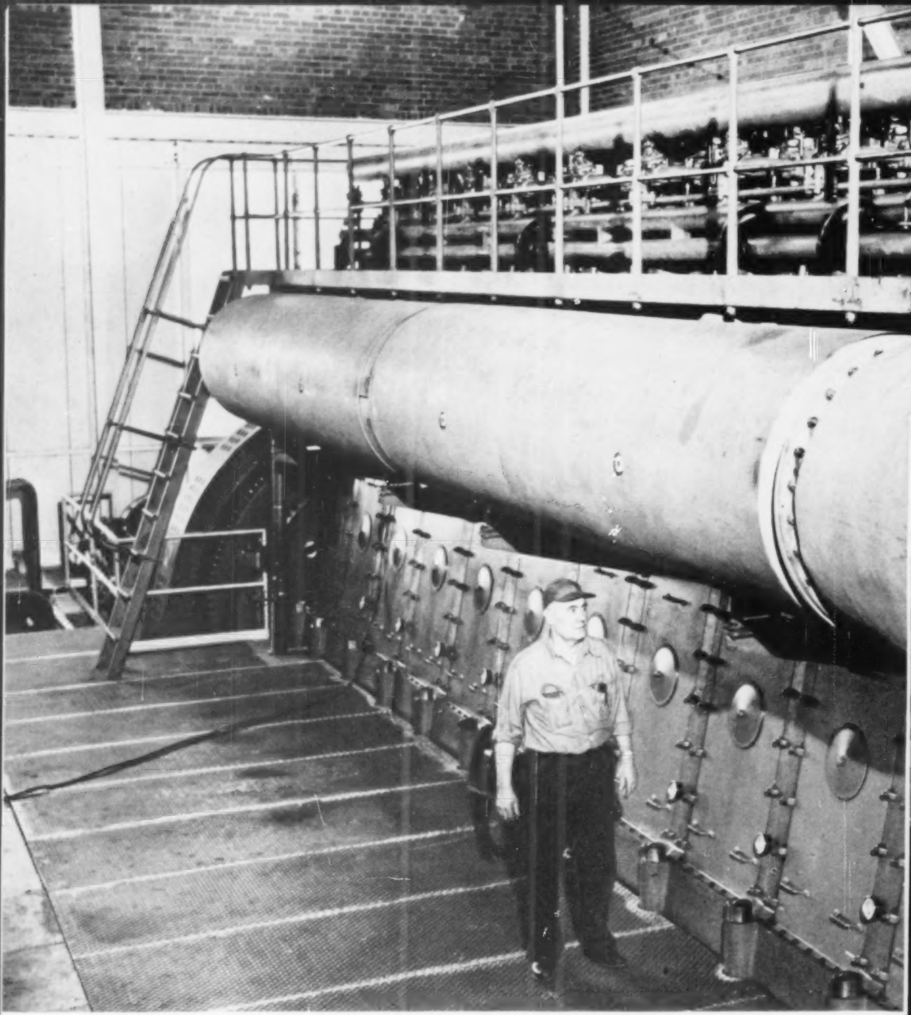
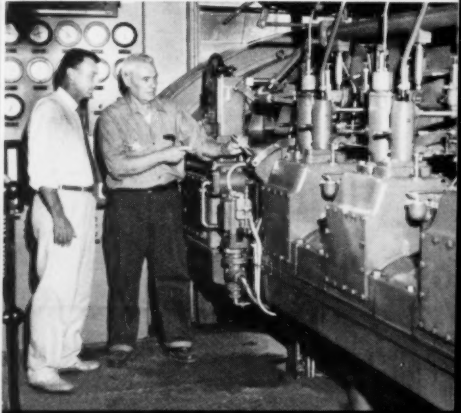
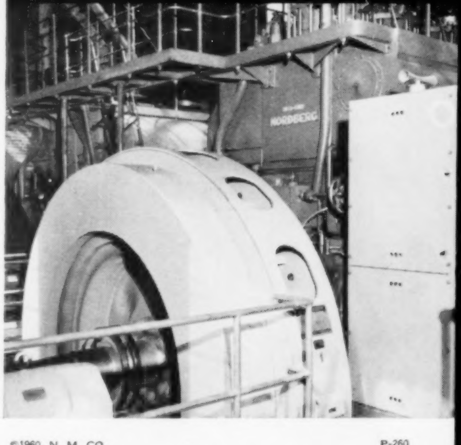




▲ Chief Engineer Steward demonstrates starting procedure of 4200 hp Nordberg engine to City Manager La Duex.

◀ General view of the 10-cylinder Nordberg 2-cycle, 4800 hp Duafuel® engine installed in the Russell plant in 1955.

The 4200 hp Nordberg Duafuel® unit was installed in 1958. The two Nordberg engines provide 9000 hp to bring plant capacity to 16,220 hp. ▼



Municipal Power Plant Pays Cash For 4200 HP Engine from Savings Made on 4800 HP Unit Installed in 1955

City Manager John La Duex, Chief Engineer Dewey Steward, and the entire City of Russell, Kansas can be justifiably proud of their municipal power plant. It is the largest municipal diesel plant in Kansas, and in fact, the largest engine generating plant in the state.

This municipally owned and operated diesel power plant began operation in 1910, in the early years of the town's development. Steady progress and growth have characterized the efficient operation of this plant to handle its ever increasing demand for electrical power.

Two large Nordberg Duafuel® engines—a 4800 hp unit installed in 1955 and a 4200 hp unit installed in 1958—are helping to establish impressive records of efficiency and economy. Together, these two reliable Nordberg engines have cut the plant average fuel-lube cost to just 3.34 mills per kwh. The fuel cost of the new unit is 2.5 mills per kwh.

The municipal power plant at Russell, Kansas is indeed evidence of why taxpayers vote "YES" for modern diesel power.

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(Continued from page 252)

George C. Merkel, manager of Grinnell, Iowa, for nearly three years is the new borough manager of Middletown, Pa., succeeding Ernest G. Tomlinson.

Constantine Mitchell has been appointed manager of Bensalem Township, Pa. Mr. Mitchell has been auditor and comptroller's field representative with the Pennsylvania Department of Highways and was previously comptroller of four other Pennsylvania departments.

Dan Mize, formerly manager of McLean, Tex., was recently appointed manager of Mexia, Tex., succeeding Howard F. Mace.

Kenneth D. Morrison, formerly assistant city engineer for the City of Buena Park, Calif., has been appointed manager of that city, succeeding Philip W. Storm, now chief administrator at Cupertino, Calif.

Donald C. Peach, administrative assistant in Bloomfield, Conn., has been appointed the first manager of Glastonbury, Conn.

Robert D. Pulscher, assistant to city manager in Sioux City, Ia., has been appointed as manager of Coon Rapids, Minn., succeeding L. B. Mason.

O. Lionel Pomroy, manager of Pittsfield, Me., for the past four years, has been appointed manager of Brewer, Me., succeeding Donald J. Waring, who is going into private business.

Melvin L. Reese, manager of Montgomery County, Md., for the past five years, has been appointed manager of Miami, Fla., succeeding Ira F. Willard, who resigned to enter private business.

Frank R. Smiley, assistant to the manager of Oak Park, Ill., was recently appointed manager of Springfield, Ore., succeeding E. Robert Turner, now manager of Boulder, Colo. Mr. Smiley has also served as assistant to the manager and chief engineer of Wilmington, Del.

J. W. Tippit, formerly employed in the field of governmental administration at Texas A. & M. College, has been appointed manager of Belton, Texas, succeeding W. J. Warren.

Jon Wilson, administrative assistant in Lubbock, Tex., has been appointed the first manager of Brinkley, Ark.

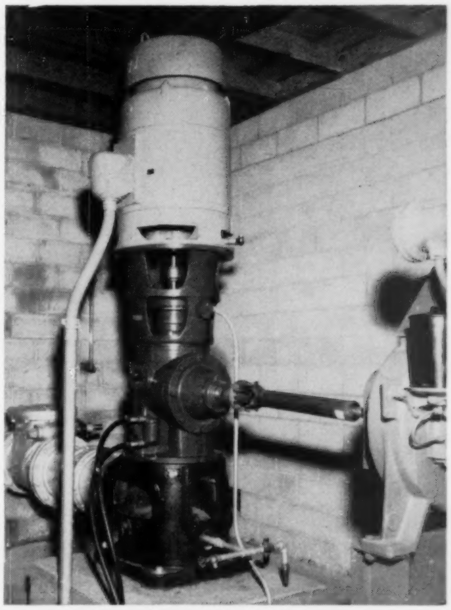
William F. Wilson, manager of Vassar, Mich., for the past six years, has been appointed as the new manager of Buchanan, Mich., succeeding John H. Kennaugh, now manager of Wyoming, Mich. Mr. Wilson was previously administrative assistant in the public works department of University City, Mo.

Ray A. Woods, manager of Huntington Park, Calif., has been appointed the first manager of Lompoc, Calif. Mr. Woods has previously been manager of San Fernando, Calif.

George L. Young, manager of Cavendish town and Cavendish village, Vt., has been appointed manager of Northfield town and Northfield village, Vt., succeeding John Wolfenden. Mr. Young has also been manager of South Berwick, Me.

John L. Young, administrative assistant of Fort Pierce, Fla., is the new manager of Safety Harbor, Fla., succeeding Charles H. Tucker. Mr. Young was formerly employed by the Housing and Home Finance Agency, Atlanta, Ga.

Orin F. Nolting
Executive Director
International City Managers' Association



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Redi-Torq combination right angle gear drive with automatic clutch, eliminates manual switch-over to engine drive in case of power failure. Drive couples to engine by flexible shafting or couplings—engine clutch unnecessary. Engine may be tested without interfering with electric motor operation of pump.

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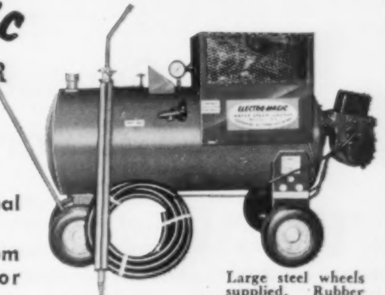

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CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

May 10-12—Washington, D. C.

National Highway Users' Conference. Biennial Convention (Mayflower Hotel). Dir., Arthur C. Butler, 966 National Press Bldg., Wash., D. C.

May 10-14—Chicago, Ill.

International Municipal Conference. Joint Meeting of the United States Conference of Mayors and the Canadian Federation of Mayors & Municipalities (Conrad Hilton). Exec. Dir., Harry R. Betters, 1707 H Street N.W., Washington 6, D. C.

May 11-13—Wenatchee, Wash.

Association of Washington Cities. Annual Convention (Cascadian and Columbian Hotels). Exec. Sec., Chester Biesen, 250 Smith Hall, Univ. of Washington, Seattle 5, Wash.

May 11-13—Tucson, Ariz.

League of Arizona Cities and Towns. Annual Conference (Pioneer Hotel). Exec. Dir., John J. DeBolske, 2727 North Central Ave., Phoenix, Ariz.

May 14-18—New York, N. Y.

American Assoc. of Airport Executives. Annual Convention and Business Meeting (Waldorf-Astoria Hotel). Exec. Sec., F. R. Hoyt, P. O. Box 1450, El Paso, Texas.

May 15-20—Bal Harbour, Fla.

American Water Works Association. Annual Convention (Americana Hotel). Exec. Sec., Raymond J. Faust, 2 Park Ave., New York, N. Y.

May 16-19—St. Paul, Minn.

National Institute of Municipal Clerks. Annual Meeting (Lowry Hotel). Sec., Arthur J. Shinners, Town Hall, Brookline, Mass.

May 16-20—Montreal, Canada

National Fire Protection Assoc. Annual Meeting (Queen Elizabeth Hotel). Gen. Mgr., Percy Bugbee, 60 Batterymarch St., Boston, Mass.

May 22-26—Cincinnati, Ohio

Air Pollution Control Association. Annual Meeting (Netherland-Hilton). Exec. Sec., Arnold Arch, 4400 Fifth Ave., Pittsburgh 13, Pa.

May 22-26—Bal Harbour, Fla.

American Society of Planning Officials. Annual Conference (Americana Hotel). Exec. Dir., Dennis O'Harrow, 1313 E. 60th St., Chicago 37, Ill.

May 23-25—Gatlinburg, Tenn.

Tennessee Municipal League. 21st Annual Convention (Riverside Hotel). Sec., Herbert J. Bingham, Life and Casualty Tower, Nashville 3, Tenn.

May 24-27—Washington, D. C.

National Rivers & Harbors Congress. 47th National Convention (Mayflower Hotel). Exec. Vice-Pres., William H. Webb, Suite 523-A, La Salle Bldg., 1028 Connecticut Ave. N.W., Washington 6, D. C.

May 28-June 3—San Juan, Puerto Rico

International Federation For Housing & Planning and Inter-American Planning Society. Joint World Congress (University of Puerto Rico). Sec.-Gen., Humberto Espinosa, P. O. Box 1729, San Juan, Puerto Rico.

June 2-4—Ocean City, N. J.

Eastern Assoc. of Fire Chiefs. Annual Convention (Flanders Hotel). Sec., Edwin J. Clark, Box 328, Wayne, Pa.

June 5-8—Honey Harbour, Ont., Can.

Ontario Water Resources Commission. 7th Industrial Wastes Conference (Delawanna Inn). Sec., D. S. Caverly, Ontario Water Resources Comm., East Block, Parliament Bldg., Toronto, Ont.

June 5-9—New York, N. Y.

Municipal Finance Officers Assoc. of the U. S. and Canada. Annual Meeting (Statler Hilton Hotel). Exec. Dir., Joseph F. Clark, 1313 E. 60th St., Chcago 37, Ill.

June 5-10—Atlantic City, N. J.

National Conference on Social Welfare. Annual Forum (Convention Hall, Ambassador and Ritz-Carlton). Sec., Joe R. Hoffer, 22 W. Gay St., Columbus 15. Ohio.

*** June 6-8—Albany, N. Y.**

New York State Office For Local Government. Preview of Local Government, 1960-1970: Statewide Workshop. P. O. Box 7004, Capital Station Annex, Albany, New York.

June 14-17—Pittsburgh, Pa.

American Water Works Assoc.—Pennsylvania Section. Annual Meeting (Hilton Hotel). Sec.-Treas., L. S. Morgan, 413 First National Bank Bldg., Greensburg, Pa.

June 15-17—Madison, Wis.

Central States Sewage and Industrial Wastes Assoc. Annual Meeting (Hotel Lorraine). Sec.-Treas., Scott E. Linsley, 2400 Childs Road, St. Paul 6, Minn.

June 15-17—Ottumwa, Iowa

Iowa Sewage and Industrial Wastes Assoc. Annual Meeting (Ottumwa Hotel). Sec., L. F. Skorczeski, 207 South 15th Ave., Marshalltown, Iowa.

June 15-17—Columbus, Ohio

Ohio Sewage and Industrial Wastes Treatment Conference. Annual Meeting (Neil House). Sec.-Treas., H. M. Crane, 3400 Northeastern, Oklahoma City 5, Okla.

June 15-17—Richmond, Va.

Virginia Wastes and Sewage Works Assoc. Annual Meeting (John Marshall Hotel). Sec.-Treas., Orval J. Hand, Hercules Powder Co., Hopewell, Va.

*** June 15-17 Glenwood Springs, Colo.**

Colorado Municipal League. Annual Meeting (Hotel Colorado). Exec. Sec., Jay T. Bell, 2300 Broadway, Boulder, Colo.

***June 15-17—Winona, Minn.**

League of Minnesota Municipalities. Annual Meeting (Hotel Winona). Exec. Sec., Orville C. Peterson, 15 University Library Building, Minneapolis 14, Minn.

*** June 16-18—McCall, Idaho**

Idaho Municipal League. Annual Meeting (Shore Lodge). Dir., Robertson W. Smith, 348 State Street, Weiser, Idaho.

June 19-21—Ocean City, Md.

Maryland Municipal League. 12th Annual Conference (Atlantic Hotel). Exec. Sec., Alan Beals, Maryland Municipal League, Box 276, College Park, Md.

June 19-22—Rochester, N. Y.

New York Conference of Mayors and other Municipal Officials. Annual Meeting (Manger Hotel). Exec. Sec., Addison Mallery, 6 Elk St., Albany, N. Y.

June 26-July 1—Atlantic City, N. J.

American Society For Testing Materials. Annual Meeting (Chalfonte-Haddon Hall). Sec., R. J. Painter, 1916 Race St., Philadelphia 3, Pa.

June 27-29—New York, N. Y.

American Society of Landscape Architects. 61st Annual Meeting (Waldorf-Astoria Hotel). Chairman, Wolcott E. Andrews, 238 East 68th St., New York 21, N. Y.

***July 17-19—Athens, Ga.**

Georgia Municipal Assoc. Annual Meeting (Georgian Hotel). Exec. Dir., W. E. George, 406 Fulton, Federal Bldg., Atlanta 3, Georgia.

July 18-22—San Francisco, Calif.

National Association of Sanitarians. Annual Meeting (Jack Tar Hotel). Sec., Nicholas Pohlit, c/o Univ. of Denver, Denver 10. Colo

***Aug. 10-12—University Park, Pa.**

Pennsylvania Sewage & Industrial Wastes Assoc. Annual Meeting (Penna. State University). Sec-Treas., J. R. Harvey, 996 So. Main St., Meadville, Pa.

Aug. 14-17—New York, N. Y.

American Public Works Assoc. Annual Convention (Manhattan Hotel and New York Coliseum). Exec. Dir., Robert D. Bugher, 1313 E. 60 St., Chicago 37, Ill.

Aug. 14-17—Miami Beach, Fla.

National Association of County Officials. Annual Meeting (Hotel Fontainebleau). Exec. Dir., Bernard F. Hillenbrand, 1001 Connecticut Ave. N.W., Washington 6, D. C.

Aug. 14-19—Boston, Mass.

National Shade Tree Conference. Annual Meeting (Statler-Hilton Hotel). Sec., L. C. Chadwick, Dept. of Horticulture Ohio State Univ., Columbus 10, Ohio.

***Aug. 31-Sept. 2—Huron, So. Dakota**

South Dakota Municipal League. Annual Meeting (Marvin Hughut Hotel). Exec. Dir., J. G. Barger, P. O. Box 938, Aburdeen, South Dakota.

*** Sept. 5-9—Colorado Springs, Colo.**

International Conference of Building Officials. Annual Conference (Broadmoor Hotel). Mgr. Dir., Hal Colling. 610 South Broadway, Los Angeles 14, Calif.

*** Sept. 7-9—Watertown, So. Dakota**

South Dakota Water & Sewage Works Conference. Annual Conference (Grand Hotel). Sec.-Treas., Don C. Kalda. State Dept. of Health, Pierre, So. Dak.

Sept. 11-15—Long Beach, Calif.

American Institute of Park Executives. Annual Convention (Lafayette Hotel). Exec. Sec., Alfred B. LaGasse, Oglebay Park, Wheeling, W. Va.

Sept. 11-16—Pittsburgh, Pa.

Illuminating Engineering Society. National Technical Conference (Penn-Sherston Hotel). Managing Dir., A. D. Hinckley, 1860 Broadway, New York 23, N. Y

***Sept. 12-14—Knoxville, Tenn.**

American Water Works Assoc.—Kentucky-Tenn. Section. Annual Meeting (Andrew Jackson Hotel). Sec.-Treas., Harold F. Mount, 5400 Preston Hwy., Louisville, Ky.

Sept. 12-15—Rochester, N. Y.

International Association of Fire Chiefs. Annual Meeting (Manger Hotel). Dir., B. Richter Townsend, 232 Madison Ave., New York 16, N. Y.

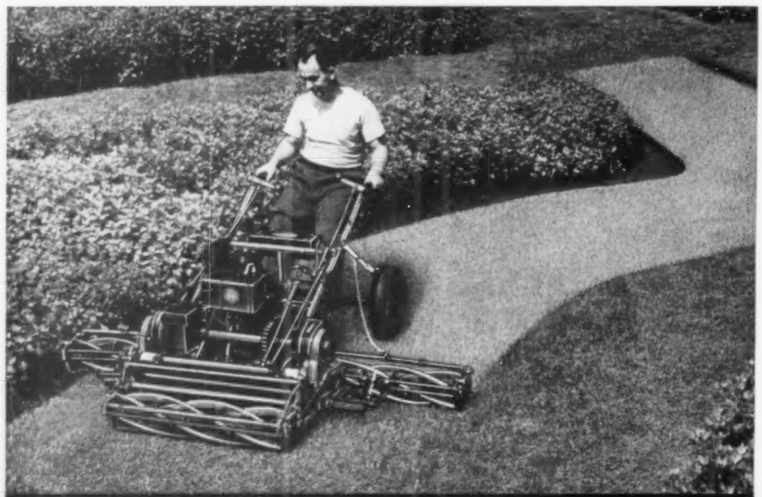
Sept. 12-16—Chicago, Ill.

Institute of Traffic Engineers. Annual Meeting (Edgewater Beach Hotel). Exec. Sec., David M. Baldwin, 2029 K St. N.W., Washington 6, D. C.

*** Sept. 14-16—Saranac Inn, N. Y.**

American Water Works Assoc.—N. Y. Section. Annual Meeting (Saranac Inn). Sec. Treas., Kimbail Blanchard, c/o Neptune Meter Co., 22-22 Jackson Ave., Long Island City, New York.

(Continued on page 258)



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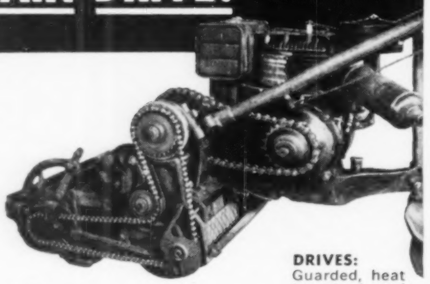

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Conventions—When and Where

(Continued from page 257)

***Sept. 14-16—Virginia Beach, Va.**
American Water Works Assoc.—Virginia Section. Annual Meeting (Cavalier Hotel). Sec., E. H. Ruehl, c/o R. Stuart Royer & Assoc., 15 W. Cary St., Richmond, Va.

***Sept. 15-17—Salt Lake City, Utah**
Utah Municipal League. Annual Meeting (Newhouse Hotel). Exec. Dir., Tom McCoy, Newhouse Hotel, Salt Lake City, Utah.

***Sept. 18-21—Denver, Colo.**
International Assoc. of Assessing Officers. Annual Meting (Hilton Hotel). Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago, Ill.

***Sept. 18-22—Montreal, Canada**
New England Water Works Assoc. Annual Meeting (Queen Elizabeth Hotel). Sec., Joseph C. Knox, 73 Tremont Street, Boston 8, Mass.

***Sept. 18-20—Wichita, Kansas**
League of Kansas Municipalities. Annual Convention (Hotel Broadview). Exec. Dir., E. A. Mosher, 112 West 7th., Topeka, Kansas.

***Sept. 18-20—Roanoke, Va.**
League of Virginia Municipalities. Annual Meeting (Roanoke Hotel). Exec. Sec., Harold I. Baumes, 905 Travelers Bldg., Richmond 19. Virginia.

***Sept. 19-21—Atlanta, Ga.**
National Conference for County Engineers and Officials. Annual Meeting (Atlanta Biltmore Hotel). Dir., Ben F. Ostergren, County Division, ARBA, 600 World Center Bldg., Washington 6, D. C.

Sept. 19-22—New York, N. Y.
International Municipal Signal Assoc. Annual Conference (Hotel Astor). Sec., Irvin Shulsinger, 130 West 42nd St., New York 36, N. Y.

Sept. 19-23—Boston, Mass.
National Municipal Cemetery Conference. Annual Meeting (Statler Hotel). Sec., Vernon J. Birkhimer, Bureau of Cemeteries, 4809 W. Franklin St., Richmond 26, Va.

***Sept. 20-23—Grand Rapids, Mich.**
Michigan Municipal League. Annual Meeting (Pantlind Hotel). Dir., John H. Huess, 205 South State St., Ann Arbor, Michigan.

***Sept. 20-23—Minneapolis, Minn.**
United States Civil Defense Council. Annual Meeting (Lexington Hotel). Sec., Elliott R. Jackson, Municipal Auditorium, Atlanta 3, Georgia.

***Sept. 21-23—Traverse City, Mich.**
American Water Works Assoc.—Michigan Section. Annual Meeting (Park Place Hotel). Exec. Sec., T. L. Vander Velde, Dept. of Health, Lansing 4, Mich.

***Sept. 21-23—Sioux Falls, So. Dakota**
American Water Works Assoc.—North Central Section. Annual Meeting (Sheriton & Cataract Hotels). Exec. Sec., Carl A. Flack, St. Paul Water Dept., 216 Courthouse, St. Paul 2, Minn.

***Sept. 21-23—Cincinnati, Ohio**
Ohio Municipal League. Annual Meeting (Sheraton-Gibson Hotel), Exec. Dir. J. P. Coleman, 60 East Broad Street, Columbus 15, Ohio.

***Sept. 25-27—Jefferson City, Mo.**
Missouri Sewage & Industrial Wastes Assoc. Annual Meeting (Hotel Governor). Sec.-Treas., W. A. Kramer, Div. of Health, State Office Bldg., Jefferson City, Missouri.

Sept. 25-28—Palo Alto, Calif.
National Assoc. of Tax Administrators. Annual Meeting (Rickey's Studio Inn). Exec. Sec., Charles F. Conlon, 1313 East 60th St., Chicago 37, Ill.

***Sept. 25-28—Philadelphia, Pa.**
Pennsylvania Municipal Authorities Assoc. Annual Meeting (Ben Franklin Hotel). Sec., Chas. F. Beeduber, 506 State St. Bldg., Harrisburg, Pa.

***Sept. 25-29—Denver, Colo.**
National Institute of Municipal Law Officials. Annual Meeting (Brown Palace). Exec. Sec., Charles S. Rhyne, 839 17th St., N.W., Washington 6, D. C.

Sept. 26-30—Washington, D. C.
National Recreation Congress. Annual Convention (Shoreham Hotel). Sec., Willard B. Stone, 8 W. 8th St., New York, N. Y.

***Sept. 28-30—Madison, Wis.**
American Water Works Assoc.—Wisconsin Section. Annual Meeting (Loraine Hotel). Exec. Sec., Harry Breimeister, Utilities Engr., City of Milwaukee, 607 Municipal Bldg., Milwaukee 2, Wisconsin.

Oct. 2-6—Philadelphia, Pa.
Water Pollution Control Federation formerly the Federation of Sewage and Industrial Wastes Associations. Annual Meeting (The Trade & Convention Center). Exec. Sec., Ralph E. Fuhrman, 4435 Wisconsin Ave. N.W., Washington 16, D. C.

Street Names Changed

In an effort to standardize the names of city streets, the Phoenix, Ariz., City Council on December 15th, changed the names of 269 streets, effective June 1. The changes were designed to eliminate duplication, eliminate the use of names not common to most of the area, place street names in their proper geographic location, officially name unnamed streets, and correct the spelling of certain street names. Most of the street name changes were for short streets that came into being as a result of residential development.

Some of the major changes were: Henshaw Road was renamed Buckeye Road from Central Avenue to 41st Street, Maricopa Street from Central Avenue to 7th Avenue was changed to Buckeye Road, Olive Avenue from 7th Avenue to west city limits was renamed Dunlap Avenue, and Shea Boulevard from 24th Street to 32nd Street was changed to Peoria Avenue. A logical system of street names has been urged by postal officials, who reviewed and approved the changes. ◄

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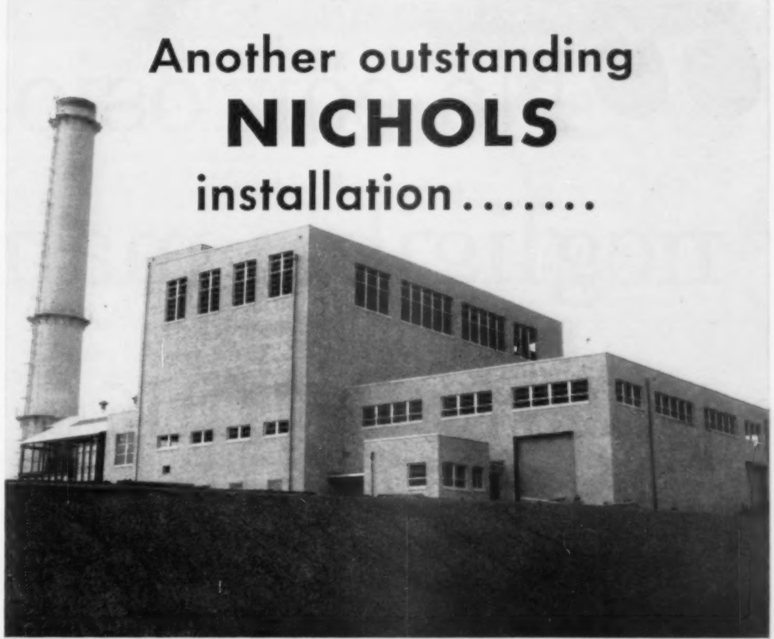

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MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Civil Engineering Data

DATA BOOK FOR CIVIL ENGINEERS (DESIGN)—*By Elwyne E. Seelye. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, New York.* 1960. 550 *pp.* $24.

This is the first volume of a three-volume series that presents in concentrated form a collection of data necessary to design, place under contract, and construct all types of engineering structures. The book includes a clarification of modern codes, practices and design. Tables for prestressed concrete, limit design, composite beam construction, cathodic protection and AASHO road standards have been emphasized. The 25 sections include such subjects as various types of structural design; road and street construction and related functions; bridges, railroads, airports and dams; sewerage and water facilities; water-front structures and athletic fields.

La Mesa Tax Study

LA MESA: A STUDY OF ITS FUTURE—*Public Affairs Research Institute, San Diego State College, San Diego 15, Calif.* 1959. 100 *pp.* $3.

A study showing what this predominantly residential community will have to do to improve its tax base.

The report recommends:

- Annexation—provide minor tax-base improvement.
- Sewer service charges.
- Multi-family residential development—of limited value.
- Commercial development—promising, better than industrial.

The report has value chiefly as an example of how other communities can study their potential and improve their tax bases.

Metropolitanization of the United States

METROPOLITANIZATION OF THE UNITED STATES—*By Jerome P. Pickard. Urban Land Institute, 1200 18th St., N. W., Washington, D. C.* 1959. 95 *pp.* $4.

The book is of interest chiefly in the way the author divides continental United States into areas. He makes 10 separations, paying little attention to state boundaries. For this, he is to be commended. The boundaries of the 48 states show many remarkable lapses in logic and often present obstacles to the orderly growth of the nation.

The author presents some fresh new terms. He defines a *metropolitan region* as one with an overall population density of at least 100 persons per square mile, with 50% or more of these people in major metropolitan areas. A *major* metropolitan area is an urban grouping with a total population of 250,000. A *metropolitan area* is an urban grouping with a total population of 100,000. This differs somewhat from the Census Bureau's SMA (Standard Metropolitan Area).

The major weakness of the book is the author's fondness for the multiplication table. He looks at the nation's present rate of growth, whips out his slide rule, and, presto, he has the population in that fascinating future year, 2000. It is peculiar how quickly demographers forget. Less than 20 years ago, they forecast a population of 165 million, for that same future year. Today, their estimate is around 320 million. The author assumes that the present rate of growth will continue, which it probably will not. Actually, one can make a good case that the rate will increase, instead of remaining the same. It has been higher in the past, has increased in recent years, and is higher in most of the rest of the world.

The author provides assurance that the nation's urban areas are not running out of land. He identifies only three Metropolitan Regions, occupying 16% of the nation's land area (excluding our two new states) but containing almost 60% of the population. Thus, the remaining 40% can still "sprawl" across 84% of the land area. The Metropolitan Regions, incidentally, embrace lots of open land.

Public Housing Trend

TWENTY YEARS OF PUBLIC HOUSING—*By Robert Moore Fisher. Harper & Brothers, 49 East 33rd Street, New York 16, N. Y.* 1959. 303 *pp.* $6.50.

This book raises thought-provoking questions about certain long-held theories on slums and their effect. It starts out by asking just what public housing is—and getting an unclear answer. It defines "adequate housing" loosely by saying that the building must not be dilapidated, and that each unit should have a flush toilet, hot and cold running water, and a bath. It upsets a long-held belief by disclosing that white residents, rather than non-white, live in three-fourths of substandard housing. Furthermore, not all substandard housing is occupied by low-income families. Not all substandard housing is rental property. Owner-occupants inhabit one-third of the substandard property within standard metropolitan areas.

The author's analysis is refreshing and timely. He asks for a decentralization of authority to give more local autonomy. He points out that public housing, with its "in lieu of taxes" policy, pays much more to the city than the slum property it replaced. He gives a workmanlike set of recommendations for future policy.

The one little booby-trap he has set for his book appears on page 1: ". . . a program offering shelter on the basis of 'from each according to his ability, to each according to his need.'" Enemies of public housing will remind him that this was a favorite quotation of a certain obscure German economist of a little more than 100 years ago, who had the name of Marx.

Maybe he did it on purpose to stimulate thinking. Certainly modern urban society needs people who do the work that does not command a high salary. It also needs to have such people decently housed.

Eminent Domain

PROCEEDINGS OF THE 1959 INSTITUTE ON EMINENT DOMAIN—*By Robert A. Wilson, Matthew Bender & Company, Inc., 255 Orange Street, Albany 1, N. Y.* 1959. 287 *pp.*

A bound volume of papers on a legal subject that undoubtedly has been worrying your city attorney. While it has a strong Texas flavor, it nevertheless presents discussions of general, nationwide value. The subjects include: misconceptions in eminent domain *vs.* police power; damage measurements in total taking; problems in partial taking; condemnation pitfalls; cross examination of expert witnesses and others.

Illustrated Water Manual

ALGAE IN WATER SUPPLIES—*By C. Mervin Palmer. Public Health Service Publication* No. 657, *Superintendent of Documents, Washington 25, D. C.* 1959. 88 *pp.* $1; 75c *in quantities of* 100.

This manual contains information on those algae important in water supplies. It includes a key, illustrations and other aids needed for their identification. It is of value to water-works operators, conservationists, industrial specialists and biology classes. Six full-page colored plates picture algae important in water supplies with one plate representing each of the following categories: taste-and-odor algae; filter-clogging algae; polluted-water algae; clean-water algae; plankton and other surface-water algae; and algae growing on reservoir walls. References to related literature are listed at the ends of the chapters in which they are cited.

Fire and Police Integration

COMBINED POLICE AND FIRE SERVICES FOR MEDIUM-SIZED AND SMALL CITIES—*Missouri Public Expenditure Survey, 222 East Dunkin, P. O. Box 56, Jefferson City, Mo.* 20 *pp.* $1.

Medium-sized and small cities considering combining fire and police functions should reflect on this report of experience in 58 U. S. and Canadian municipalities, ranging from under 1,000 to 140,000 population, that have integrated some or all of their police and fire services into a single operation.

The resulting public safety officers are assigned to patrol cars. In addition to police equipment, the men have with them fire extinguishers and hydrant wrenches. Fire alarms go by radio to public safety officers on patrol as well as to fire apparatus drivers in stations.

With radio communications it is no longer necessary for all stand-by personnel to wait in fire stations for alarms. Instead of being paid for waiting time, most of the men can be assigned to patrol vehicles, augmenting police service as well as speeding up responses to fires. The survey quotes studies showing firemen spend no more than 1% of their time at and going to and from fires.

Beautifying the Urban Expressways

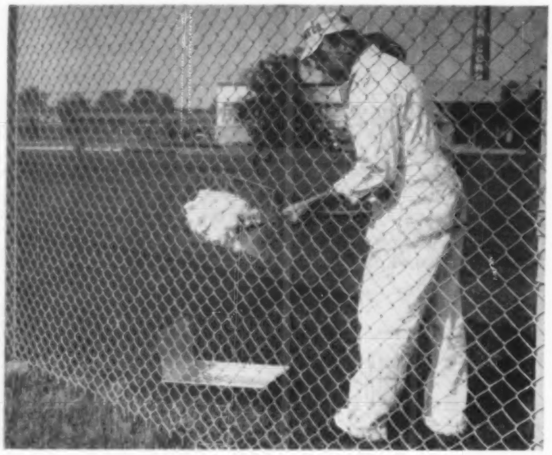
THE HIGHWAY AND THE LANDSCAPE—*By W. Brewster Snow. Rutgers University Press, 30 College Ave., New Brunswick, N. J.* 1959. 229 *pp.* $5.

A highly readable book that gives interesting and unfortunately often-forgotten history of the urban expressway and parkway systems. It documents the encouraging fact that we have reduced traffic fatalities from 16 per 100 million vehicle miles in the 1920's to somewhat more than 6 today. It argues that the modern expressway *almost* always enhances the value of nearby property, thus counterbalancing the loss of tax ratables that the expressway itself causes. Interestingly enough, the text asserts that the two best-planned suburban developments in the nation are Park Fairfax and Fairlington, outside of Washington, D. C., because of the close attention given to the highway-transportation feature.

It provides some refreshing ideas on highway alignment not generally available

(Continued on page 263)

HOW BEST TO PAINT A WIRE FENCE



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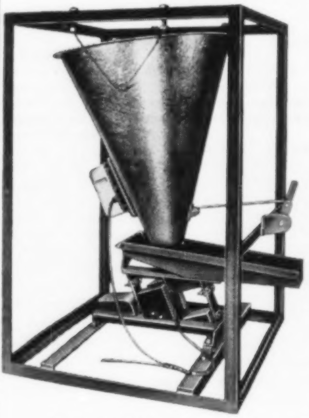

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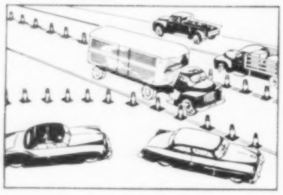

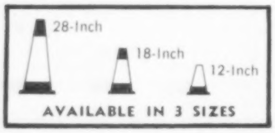

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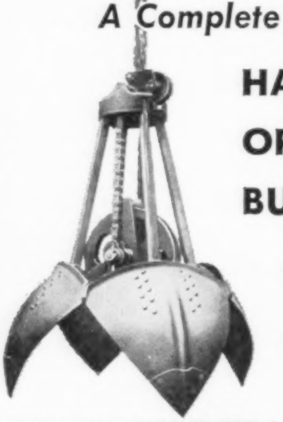

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(Continued from page 261)

elsewhere. It pays an unexpected tribute to the old-time political boss, who, while he exacted a high price, built well and solidly. It has some ideas about roadside zoning worth review; and it has a helpful list of plantings that can be used to beautify a parkway (or any other park of a city, for that matter).

It strives hard to assert that property abutting an expressway will not suffer loss of value. Unfortunately, this is not always true. An expressway by nature is a noisy thing, and this noise cannot be muffled by trees, shrubs or fences. In general, those properties abutting an expressway pay a penalty unless the right-of-way is wide, 200 feet or more.

Politics

POLITICS IS YOUR BUSINESS—*By William H. Baumer and Donald G. Herzberg. The Dial Press,* 461 *Fourth Avenue, New York* 16, *New York.* 1959. 187 *pp.* $3.50.

A gentle, almost superficial little book written for the timid. It says, "Come on in! The water's fine," even though the water is cold, the current is swift, and the swimming is unpleasant for those who do not like people nor respect their rights, and are not tolerant of their differing opinions. But the "swimming" is exhilarating and satisfying to those who do. The book starts with a political activity credo for businessmen, selling efficiency in its first line. We suggest gently that the authors rewrite this creed to sell democracy first and efficiency second. We rather like the advice by city managers at their recent meeting in St. Louis, "If forced to choose between an undemocratic efficient way, and a democratic, but less efficient way, always choose the latter."

The first page of the first chapter has an uncomfortable overtone of "what's in it for me?" ("You must get active in politics if you want to stay active in business"). Later the authors say optimistically that politics won't hurt your business. It waxes enthusiastic over the two-party system and is scornful of independent citizen movements. Nevertheless it quotes at some length and with praise the "Citizens for Merriman" movement that almost elected a non-partisan mayor of Chicago.

The authors ought to recognize that businessmen already are in politics, and are doing a bang-up job. They have changed their local governments to the council-manager form in some 1,600 cities across the nation, and kept it against strong opposition in all but 3% of the cities.

Growth in Downtown Dwellings

RESIDENTIAL RENEWAL IN THE URBAN CORE—*By Chester Rapkin and William G. Grigsby. University of Pennsylvania Press,* 3436 *Walnut Street, Philadelphia* 4, *Penna.* 1960. 131 *pp.* $3.75.

A scholarly but readable little text showing that, even in Philadelphia, a city of small homes, a large sector of the population will be glad to enjoy the convenence and comfort of downtown living if it has the chance. The book measures the demand for three types of downtown dwellings and finds it active. It consists, however, of families without children or whose children have grown, and with annual incomes considerably above $5,000 and whose livelihood is intimately related to the area. They are in general, people with civic responsibility and time to devote to it. They provide the area with a strong tax base and do not impose a heavy cost on the city for schools. All these are characteristics that will strengthen a city's urban core.

While the book is written about conditions in Philadelphia, it will be of interest to administrators in other cities, providing them with a pattern for making similar surveys for their own planning work.

State and Local Government

AMERICAN STATE GOVERNMENT AND ADMINISTRATION, SIXTH EDITION—*By Austin F. MacDonald. Thomas Y. Crowell Company,* 432 *Fourth Avenue, New York* 16, *New York.* 1960. 702 *pp.* $7.

A good text to have in a municipal reference library, if for no other reason than to read the chapter on evaluation of mu-

(Continued on page 264)

REPRESENTATIVE MUNICIPAL BOND ISSUES

From March 1st to April 4th, 1960

Date of Issue	Locality	Amount in $1,000	Purpose	Term Yrs. to Maturity	Rate of Int.	Yield %
3/ 1/60	Clifton, N. J.	590	General Improvement	8½	3.80	3.79
3/ 2/60	Springfield, Mass.	500	Water Mains Loan	10½	3.25	3.24
3/ 2/60	Westport, Conn.	3,185	Sewer, Park and Rec.	10⅓	3.55	3.50
3/ 3/60	Everett, Mass.	1,470	City Hall Construction	10⅓	3.40	3.36
3/ 8/60	Lackawanna, N. Y.	726	General Improvement	4½	3.50	3.46
3/ 8/60	Randolph, Mass.	570	Sewerage Loan	9	3.60	3.56
3/10/60	Niagara, N.Y., Water Dist.	1,450	Water	16	3.80	3.78
3/10/60	South Euclid, Ohio	900	Storm and San. Sewers	10½	4.25	4.18
3/14/60	Drummondville, Que., Can.	500	City Improvement	11½	6.00	6.43
3/14/60	Ste-Anne-de-Bellevue, Que., Can.	960	Town Improvement	16	6.00	6.60
3/16/60	Keene, N. H.	500	Sewer	10½	3.20	3.12
3/16/60	Waltham, Mass.	100	Street and Off-St. Parking	5½	3.25	3.23
3/21/60	Euclid, Ohio	2,300	Sewage Disposal Plant	12½	4.00	3.82
3/22/60	Swift City, Minn.	500	Drainage	9	4.00	3.93
3/24/60	North Tonawanda, N. Y.	3,086	Water, Various	14	3.70	3.68
3/28/60	Cheektowaga, N. Y.	1,122	Public Improvement	13½	3.75	3.74
3/29/60	Grand Island, NY. Water Dist.	583	Water	12½	4.00	3.97
3/29/60	Los Angeles Cty., Calif., Flood Control Dist.	10,000	Flood Control	5⅓	3.75	3.63
3/29/60	Minneapolis, Minn.	4,800	Public Improvement	5	3.10	3.02
4/ 4/60	Woonsocket, R. I.	1,400	Bond Anticipation	1	2.72	2.72

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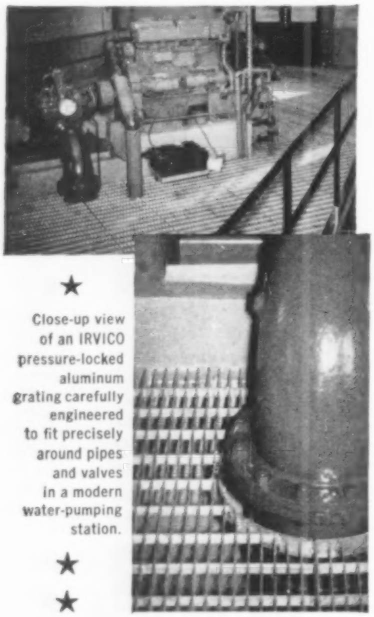

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(Continued from page 263)

nicipal governmental types. The author is a little weak in his analysis of the council-manager system even though he admires it. In this system, the mayor certainly does *not* have to be designated from among the council, but can very well be elected directly by the people. He definitely *is not nor should be* a ceremonial figurehead, but properly should fill the real post of leadership. A good manager enhances rather than weakens the effectiveness of a good mayor.

The text has instructive discussions of county, township, and district governments, particularly appropriate in today's changing urban picture. Its analysis of state government features is realistic and practical, particularly since most urban areas today have a continuous running battle with the legendary tight-fisted "farmer legislature" in their various state capitals.

Town and Square

TOWN AND SQUARE—*By Paul Zucker. Columbia University Press,* 1125 *Amsterdam Avenue, New York, New York.* 1959. 287*pp.*

An interesting book of city planning history. The author defines a square in urban society as a psychological parking place. He compares a square for a city to a lake fed by a river. His description of city planning in ancient days gives one a close feeling of kinship with those draftsmen who drew the plans for the Indian town of Mohenjo-Daro in 2500 B.C.

In his discussion of town squares in the United States, the author unfortunately overlooks the traditional and almost repetitious court house square that appears in almost every county seat in the midwest. Each had a broad expanse of grass around it and each served both as a physical and psychological gathering place—until the magic eye of television gave these good people something more entertaining to do.

ADMINISTRATION & GOVERNMENT

GENERAL—1959 Conference Proceedings: 45th ICMA Annual Conference. International City Managers Association, 1313 East 60th St., Chicago, Ill. 1959. 72 pp. $2 each; $1.50 each for five or more.

CINCINNATI, OHIO—Organization of the Government of Cincinnati and Hamilton County. Hamilton County Research Foundation, 4 West Seventh St., Cincinnati 2, Ohio. 1959. 25 pp.

CLAYTON, MISSOURI—A Report of Community Progress, 1958-59, under Council-Manager Government. Office of the City Manager, City Hall, Clayton, Mo., 1959. 20pp. 50 cents.

CLEVELAND, OHIO—A Continuing Research Program for Metropolitan Cleveland. Cleveland Bureau of Governmental Research, Inc., 1010 Euclid Bldg., Cleveland 15, Ohio. 1959. 23 pp. $2.

WAMEGO, KANS.—Employee's Handbook. Office of the City Manager, City Hall, Wamego, Kans. 1959. 11 pp.

ANNUAL REPORTS WORTH READING

ARLINGTON COUNTY, VA.—Arlington County, Va., Annual Report. Office of the County Manager, County Bldg., Arlington, Va., 1959. 48 pp.

MILWAUKEE, WIS.—1959 Directory and Report of City Activities in 1958 Municipal Reference Library, Room 803, City Hall, Milwaukee 2, Wis. 1959. 112 pp. Free to libraries and research agencies.

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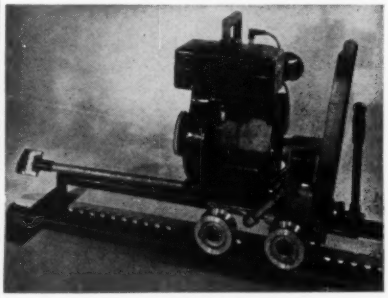

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PARSIPPANY-TROY HILLS, N. J.—Annual Report 1958-59. Office of the Township Manager, Town Hall, Parsippany-Troy Hills, N. J. 1959. 36pp.

PASADENA, CALIF.—The City Controller's Annual Report. Office of the City Controller, City Hall, Pasadena, Calif. 1959. 54 pp.

RALEIGH, N. C.—Annual Report, Department of Public Works. Department of Public Works, City Hall, Raleigh, N. C. 1959. 32 pp.

WASHINGTON, D. C.—1959 Annual Report. District of Columbia Redevelopment Land Agency, 919 Eighteenth St., N. W., Washington, D. C. 1959. 27 pp.

AIR POLLUTION

GENERAL—A Digest of State Air Pollution Laws. U. S. Government Printing Office, Washington 25, D. C. 1959. 117 pp.

BUILDING

PALO ALTO, CALIF.—When You Build in Palo Alto. Office of the City Manager, City Hall, Palo Alto, Calif. 1959. 15 pp.

FINANCE & TAXATION

CORAL GABLES, FLA.—Annual Financial Report. Office of the City Manager, City Hall, Coral Gables, Fla. 1959. 102 pp.

GRAND PRAIRIE, TEX.—Annual Bond Report 1959-60. Office of the City Manager, City Hall, Grand Prairie, Tex. 1959. 70 pp.

GREENWICH, CONN.—1960 Proposed Budget and Related Statements. Board of Estimate and Taxation, Town Hall, Greenwich, Conn. 1959. 75 pp.

HARRIS COUNTY, TEX.—Finances of Water Districts in Harris County, 1958 Fiscal Year. Tax Research Association, 818 Continental Bank Building, Houston 2, Texas. 1959. 12 pp.

LOUISVILLE, KY.—Annual Report, Director of Finance, 1958-59. Office of the Director of Finance, City Hall, Louisville, Ky. 1959. 83 pp.

MCALESTER, OKLA.—An Economic Base Study, 1959. The Institute of Community Development, University of Oklahoma, Norman, Okla. 1959. 43 pp.

RANDOLPH, WIS.—Interpreting Our Changing Times. Office of the City Clerk, Village of Randolph, Randolph, Wis. 1959. 84 pp.

PLANNING, ZONING & HOUSING

DURHAM, N. C.—Neighborhood Analysis. Durham Planning Department, City Hall, Durham, N. C. 1959. 60 pp. $2.

FRESNO, CALIF.—Land Use and the Fresno Air Terminal. Fresno City Planning Commission, City Hall, Fresno, Calif. 1959. 42 pp.

GLOUCESTER COUNTY, N. J.—Gloucester County Master Plan Handbook Number Three. Community Planning Associates, P. O. Box 206, West Trenton, N. J. 1959. 50pp. $3.

GREENSBORO, N. C.—A Look into Greensboro's Future. Greensboro Department of Planning, City Hall, Greensboro, N. C. 1959. 47 pp. $1.

NEW BRITAIN, CONN.—A Final Concept Study Report to the Mayor and Common Council from the City Plan Commission. City Plan Commission, City Hall, New Britain, Conn. 1959. 10 pp.

OAKLAND, CALIF.—Data Handbook for the Preliminary General Plan. City Planning Commission, City Hall, Oakland, Calif. 1959. 72 pp. $1.

SOUTH BEND, IND.—Major Thorofares. City Planning Commission, City Hall, South Bend, Ind. 1959. 112 pp. $3.

ST. PAUL, MINN.—Saint Paul's Preliminary Land Use Plan (Community Plan Report 8). The City Planning Board, City Hall, St. Paul, Minn. 1959. 208 pp. $2.

SIOUX CITY, IOWA—Economic Report 1959. City of Sioux City Planning and Zoning Commission, City Hall—P. O. Box 447, Sioux City, Iowa. 1959. 20 pp.

SOUTH PLAINFIELD, N. J.—South Plainfield Rezoning Study. Community Planning Associates, P. O. Box 206, West Trenton, N. J. 25 pp. $2.

PUBLIC SAFETY

GENERAL—Police Use of Dogs: A Selected Bibliography. The Police Division, Municipal Reference Library, 150 North Los Angeles St., Los Angeles 12, Calif. 1959. 5 pp.

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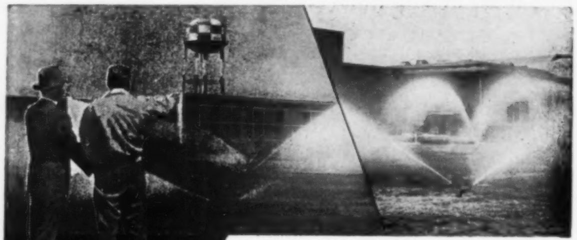

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PURCHASING NEWS

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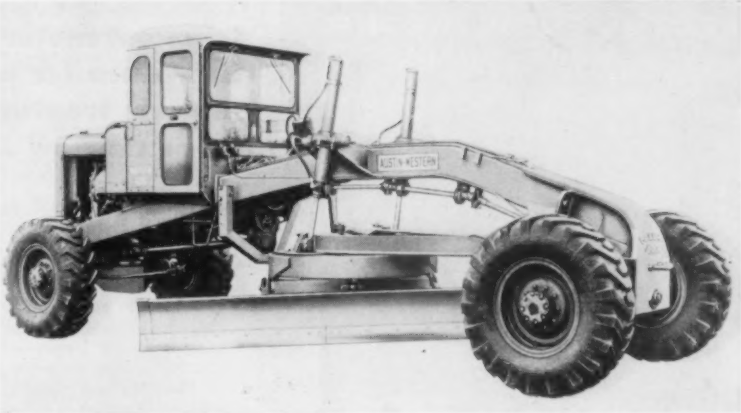


. . the 4-wheel Pacer 400 (right) and the 6-wheel Super 400—are now rolling from Austin-Western's production line. Both are in the 30,000-pound class; both have 143-hp diesel engines; and both have power drive at all wheels, power steering front and rear, power blade controls, power shift and power reverse. All-wheel drive provides full traction ahead of the blade as well as behind it.

For detailed specifications, tire options, accessories, write R. H. DILLER, ADV. MGR., AUSTIN-WESTERN WORKS, BALDWIN-LIMA-HAMILTON CORP., BOX 142, AURORA, ILL., or use the Post Card on Page 56. Circle No. 952.

1960 Case Utility Tractors

Model 530 Utility Backhoe-Loader (left) is one of three new series wheel and crawler tractors with new and higher capacity companion power equipment in the Case line.

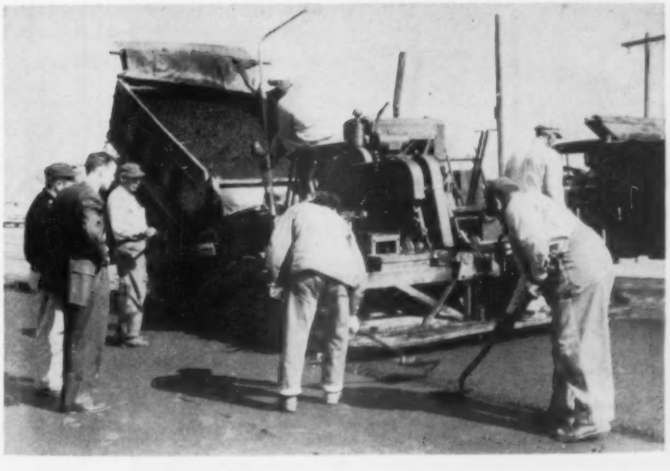
This 47-hp rig trenches and excavates down to 14 feet, and backfills, grades and loads out 2000-pound bucket loads of spoil and other bulk materials. The backhoe cuts 14 feet deep, digs 16¾ feet from pivot, piles dirt or loads. Foot-pedal 180° hydraulic swing saves hand-motions, adds dig-dump speed and accuracy. Loader bucket heaps easily, lifts quickly to dump clean with over 9-foot clearance for fast dump-and-go.

The 430 Utility wheel tractor offers power steering, shuttle transmission and 18 mph travel speed as standard, and has 4 speeds forward, one reverse. It can be equipped with loader, backhoe and loader, or backhoe alone.

The 310D Utility crawler tractor gives 5815 pounds pull and push-power for use as a loader, bulldozer, angling dozer, loader-backhoe, or drawbar unit.

For additional information, write J. I. CASE CO., RACINE, WIS., or use the Post Card on Page 56. Circle No. 945.

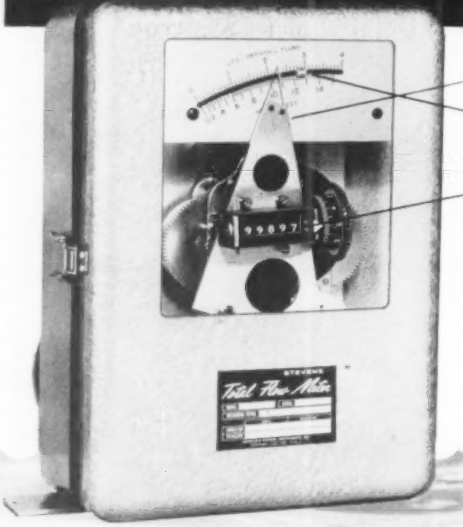
Developments with Asbestos— Asphalt Paving Mixes



The scene at the right is in Denver, Colo., where a test strip of asbestos-asphalt paving is being laid. It is one of 18 such strips now under test in eight states and the Province of Quebec, Canada. Indications are that paving performance and life are considerably improved by the addition of 2% or 3% of short asbestos fibre to asphalt paving mixes.

According to Johns-Manville, asbestos-asphalt paving mixes give a tougher road surface with increased resistance to indentation under heavy load and high temperatures, less brittleness under low temperaturers, increased flexibility and resiliency.

(Continued on page 269)



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Model 60M

Low-cost meter provides essential flow data for operation of sewage treatment plants

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- **TOTALIZES VOLUME**—Counter totalizer registers total flow.

Mechanically operated meter provides essential data in measurement of sewage, industrial wastes, irrigation water or other liquids flowing in open channels. Standard meter gives direct flow reading in cu. ft./sec. and totalizes volume in cu. ft. Readings are easily converted to other units of measurement.

The instrument is designed for use with Parshall flumes and various weirs. It is entirely mechanically operated, will function without attention for eight-day intervals, and is easy to install on table, shelf or wall. If a graphic record is desired, the meter can be used with a Stevens Type F Recorder. Write for Stevens Hydrologic Instrument Short Form Catalog No. 23, and for Bulletin 28 which describes the Model 60M meter in detail.

HYDROGRAPHIC DATA BOOK—Valuable reference file. 124 pages of technical data on recorder installations, plus a wealth of hydraulic tables and conversion tables. $1 copy. (No C.O.D.'s)

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(Continued from page 267)

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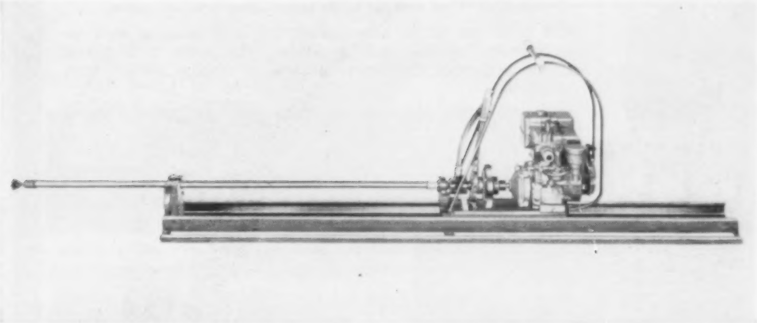

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Wincharger Corp. announces that a new series of 7,500-watt engine generators—the Winco 705 Series—is now in production.

Designed for portable or standby use, these units are said to produce 50% more power at a price near that of an ordinary 5,000-watt unit. And they include Winco's AUTOMATIC CONSERV-er, an idling control reputed to save up to 60% in fuel cost, extend engine life, and lower maintenance cost.

To make these big power units more practically portable, Wincharger is introducing a new universal heavy-duty auto-type Mobil Power trailer, designed to meet a wide range of generator capacities, as well as alternates for housing, fuel, starting and floodlighting.

For additional information on the 705 Series and Mobil-Power trailer, and to learn of municipal applications, write WINCHARGER CORP., subsidiary of ZENITH RADIO CORP., SIOUX CITY 2, IA., or use the Post Card on Page 56. Circle No. 966.

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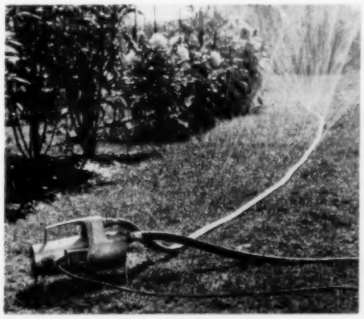
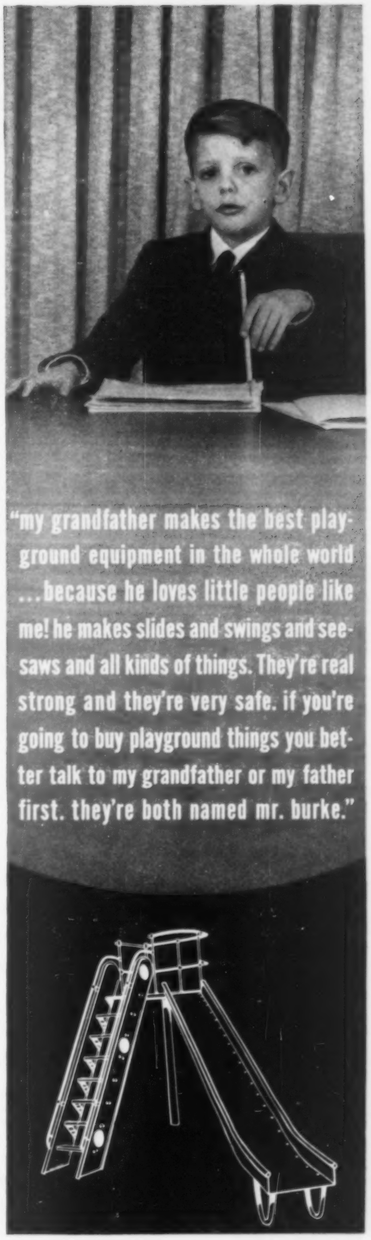


This small, easily transportable pump, called Handy Pump, will help municipal park maintenance men supply water to hard-to-get-at areas. It weighs 13 pounds, has an operating range of 2 gpm, 44 pounds pressure with 102 feet of head, up to 18 gpm, 16 pounds pressure with 37 feet of head. Handy Pump Model 80A is powered by a ½-hp motor and operates on AC or DC current. It also can be used to drain ponds,

(Continued on Page 271)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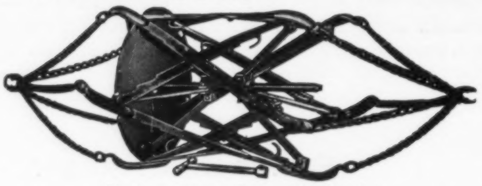

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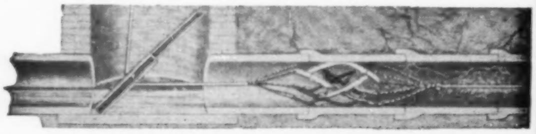
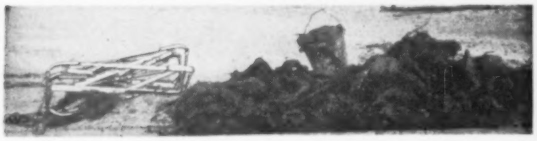


Open and in action removing roots and cake sediment like this.



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(Continued from Page 269)

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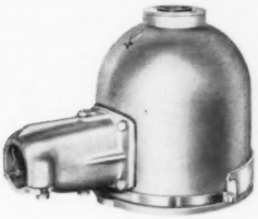
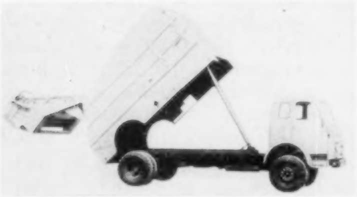
Better Light at Intersections

Efficient street light patterns at street intersections can now be obtained quickly and easily with the aid of adjustable latch lugs on Joslyn luminaires. The lug is in the form of a band which clamps on the lower portion of the head, as the photograph shows. The band provides for a 60° rotation of the optical assembly in either direction. This device is available on all standard slipfitter heads and also on standard photoelectric heads as illustrated. For details, write **Joslyn Mfg. and Supply Co., 155 N. Wacker Drive, Chicago 6, Ill.**, or use the Post Card on Page 54. Circle No. 949.



Power Packing Refuse Truck

An 18-yard Power Packer refuse collection body is the most recent in the Daybrook line. This enables municipalities to select among 16, 18 and 20 cubic yard units. All are of the rear-loading type. Each is continuous loading and pre-crushes all refuse before it compacts it into the body. The company reports that these features increase collection efficiency by approximately 20%.



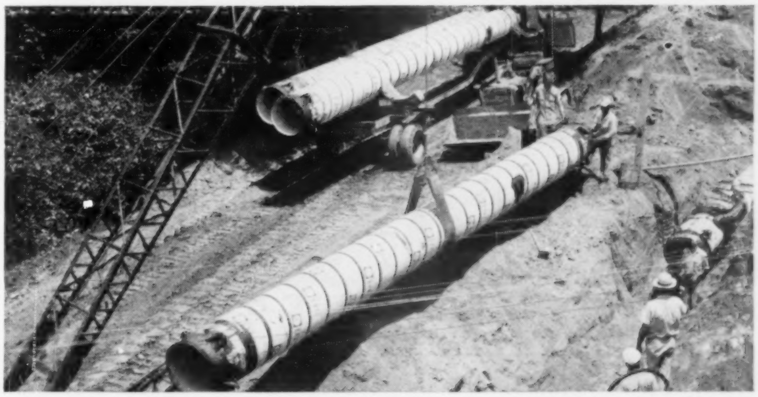
The 18-cubic-yard capacity Power Packer with body in dumping position, showing telescopic hoist.

All units are available with either an underbody or telescopic hoist. All models accommodate Daybrook's Sani-Tainer refuse container method for refuse collection. Sani-Tainers are available in 1, 2 and 3 cubic yard capacities. A standard 45-degree dumping angle and several body dimension changes have also been announced for these Power Packers.

A 12-page brochure, entitled "More Efficient Refuse Collection," gives complete details. For a copy, write **Daybrook Hydraulic Division, Young Spring & Wire Corp., Bowling Green, Ohio**, or use the Post Card on Page 56. Circle No. 953.

(Continued on Page 272)

ATLANTA *chose* STEEL PIPE



. . . every length was hydrostatically tested in the shop to AWWA standards!

To provide for industrial and residential expansion in South Fulton County, Atlanta Water Works installed an additional 8,200 ft. of steel pipe along Fairburn Road. This new line incudes 2,916 ft. of 36 in. pipe and 6,200 ft. of 30 in. pipe, all with 5/16 in. wall thickness and in 50 ft. lengths.

STRENGTH
TIGHTNESS
ELASTICITY
ECONOMY
LONG LIFE

. . . these are inherent qualities of fabricated *steel* pipe. Compare *steel* pipe with other types . . . you'll see why "wherever water flows, steel pipes it best." You can always specify *steel* pipe with confidence.

For your copy of the latest steel pipe brochure, write—

STEEL PLATE FABRICATORS ASSOCIATION
105 West Madison Street • Chicago 2, Illinois

REMOVE STUMPS FAST

even in hard-to-reach locations

new tractor-powered "STUMP GOBLER" costs $1000-$3000 less than similar equipment

Now you can get rid of unsightly, hazardous stumps in a hurry . . . no matter where they are. Removal is easy in restricted working space near fences, walks and curbs . . . completely safe in areas adjoining power cables, gas lines, water mains, and sewers.

Best of all, the new STUMP GOBLER uses the power you already have in any conventional tractor . . . costs as much as $3000 less than bulky, self-powered units. Average less than 10 gallons of gasoline for a full day's operation.

Simple hydraulic controls move the STUMP GOBLER across the stump, taking a bite 12 inches wide and 1 to 2 inches deep with every pass . . . removing a 2 foot stump in 10 to 15 minutes, a 3 footer in 15-20 minutes. Goes deep enough to permit plowing or resurfacing.

Write today for the full story of the amazing new STUMP GOBLER. Let us know the make and model of your tractor and any special applications in which you may be interested. We'll send you complete information.

MYERS-SHERMAN COMPANY

3567 S. Illinois Street • Streator, Illinois • Phone 2-2176

BEST BUY IN WATER STORAGE
PRESTRESSED CONCRETE TANKS

2,000,000 gallons—Cedar Hills Reservoir, Ridgewood, New Jersey

- *minimum maintenance*
- *75% construction cost spent locally*
- *architecturally modern*
- *longest service life*
- *lowest overall cost*

In the development of residential and industrial water supply facilities today, no other type of tank offers so many advantages as does the Prestressed Concrete Tank. Modern in engineering and design, proven in service, lowest in cost... prestressed concrete should be considered in any tank planning.

Send for Bulletin T-22.

THE PRELOAD COMPANY, INC. PRELOAD ®

355 Lexington Ave., New York 17, N. Y. • Tel.: MU 7-0488
351 Jefferson, Dallas, Texas • Tel.: WHitehall 1-5707

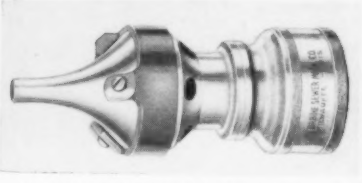
PRELOAD CONCRETE STRUCTURES INC.
837 Old Country Road
Westbury, Long Island, N. Y.
Tel.: EDgewood 3-4040

THE CANADA GUNITE COMPANY, LTD.
125 Hymus Blvd.
Pointe Claire, P.Q., Canada
Tel.: Oxford 5-6772

HERRICK IRON WORKS
28400 Clawiter Road
Hayward, Calif.
Tel.: Lucerne 1-4451

Purchasing

Sewer Cleaning Nozzle



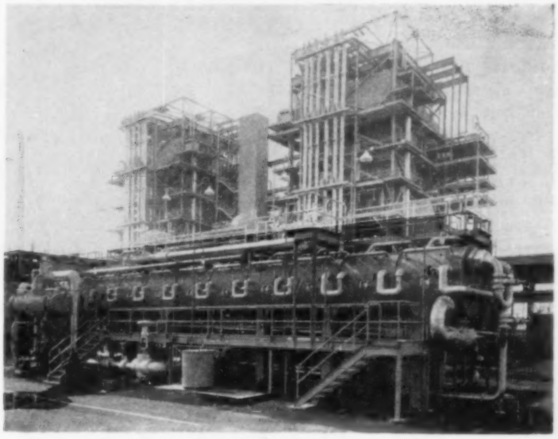
Turbine Sewer Machine Co. announces a new line of sewer cleaning equipment. One of the many items in it is this new type GK Go-Getter self-propelling sewer cleaning nozzle. This tool can be used on a 2-inch or 2½-inch fire hose. One powerful stream precedes the tool, the rest of the water is deflected rearward to propel the tool forward. The nozzle has three cutting blades and wear ring, more ball bearings and sturdier construction. For detailed information, write TURBINE SEWER MACHINE CO., DIVISION OF CHAS. H. STEHLING CO., 1303 N. FOURTH ST., MILWAUKEE 12, WIS., or use the Post Card on Page 56. Circle No. 976.

Pacific Coast Gets Sea Water Conversion Plant

The first general purpose sea water conversion plant on the Pacific Coast has just been placed in operation by Southern California Edison Co. at its steam electric plant on Mandalay Beach near Oxnard, Calif. It is said to be the first of its kind in the country to be used in conjunction with an existing steam electric generation plant.

It is a 100,000 gallon a day pilot plant that employs a new distillation principle and will be the subject of an intensive 3-year research program aimed at finding a more economical method of extracting potable water from the sea by distillation. It is expected that experience and data derived from experiments will provide technical and cost information leading to the eventual construction of saline water plants with capacities of five to ten million gallons a day of potable water.

The plant's converter is a 26-stage flash evaporator which takes advantage of water's changing boiling point when pressure is varied. According to Cleaver-Brooks Special Products, which designed, engineered and manufactured it, this type of evaporator has several ad-



A close-up of the piping and tubing of the new Pacific Coast plant's sea water conversion equipment.

vantages, including substantially scale-free operation, simplicity of operation, use of relatively low level heat sources, and favorable initial cost.

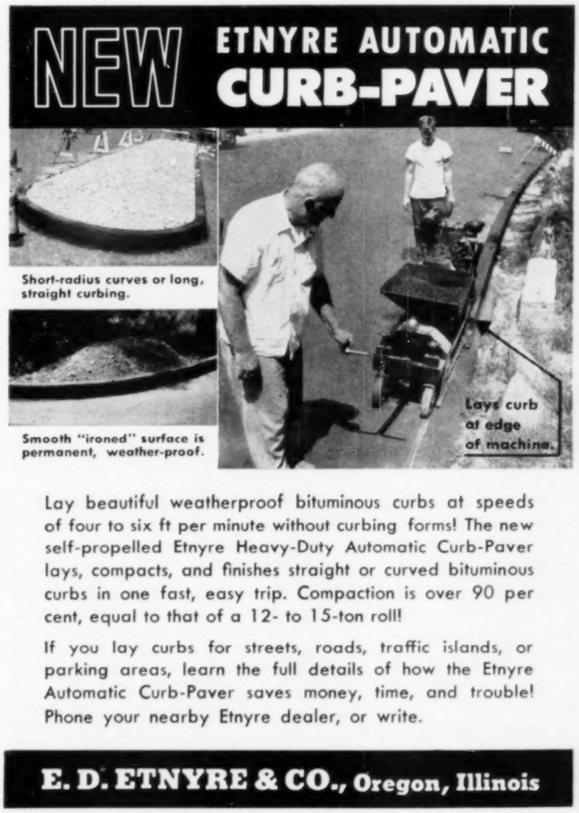
For additional information, write Cleaver-Brooks Special Products, 225 N. Grand Ave., Waukesha, Wis., or use the Post Card on Page 56. Circle No. 950.

Saves Time and Material on Asphalt Application

Hester Plow Co.'s new utility grader-applicator can be handled by any tractor with three point lift. It is adjustable to spread material, such as limerock or dolomite, from 0″ up to 2½″. It grades going for-

(Continued on page 274)

Spreading slurry seal with Hester's new utility grader-applicator.



NEW ETNYRE AUTOMATIC CURB-PAVER

Short-radius curves or long, straight curbing.

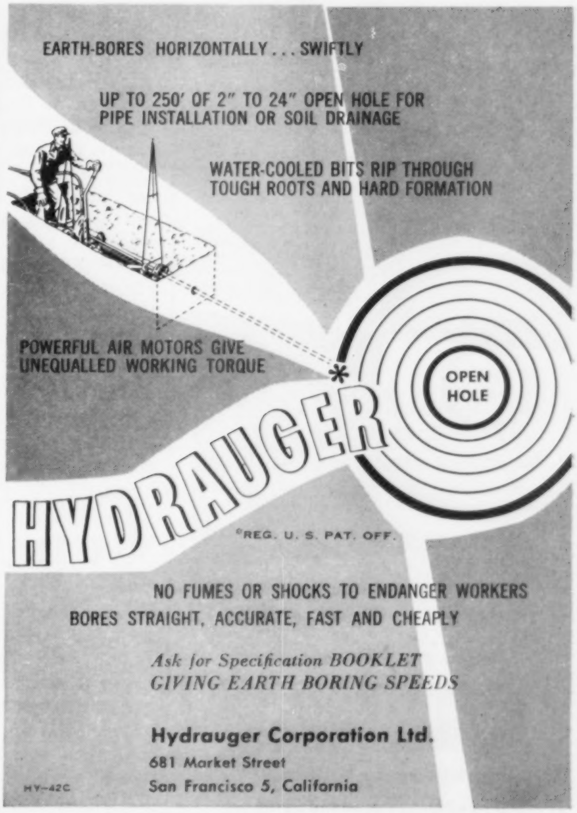
Smooth "ironed" surface is permanent, weather-proof.

Lays curb at edge of machine.

Lay beautiful weatherproof bituminous curbs at speeds of four to six ft per minute without curbing forms! The new self-propelled Etnyre Heavy-Duty Automatic Curb-Paver lays, compacts, and finishes straight or curved bituminous curbs in one fast, easy trip. Compaction is over 90 per cent, equal to that of a 12- to 15-ton roll!

If you lay curbs for streets, roads, traffic islands, or parking areas, learn the full details of how the Etnyre Automatic Curb-Paver saves money, time, and trouble! Phone your nearby Etnyre dealer, or write.

E. D. ETNYRE & CO., Oregon, Illinois



EARTH-BORES HORIZONTALLY . . . SWIFTLY

UP TO 250′ OF 2″ TO 24″ OPEN HOLE FOR PIPE INSTALLATION OR SOIL DRAINAGE

WATER-COOLED BITS RIP THROUGH TOUGH ROOTS AND HARD FORMATION

POWERFUL AIR MOTORS GIVE UNEQUALLED WORKING TORQUE

OPEN HOLE

HYDRAUGER

®REG. U. S. PAT. OFF.

NO FUMES OR SHOCKS TO ENDANGER WORKERS

BORES STRAIGHT, ACCURATE, FAST AND CHEAPLY

Ask for Specification BOOKLET GIVING EARTH BORING SPEEDS

Hydrauger Corporation Ltd.
681 Market Street
San Francisco 5, California

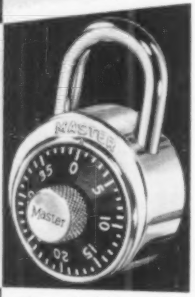
HY-42C

Master
PADLOCKS
FOR EVERY MUNICIPAL PROTECTION NEED!

- Water Works
- Power Plants
- Warehouses
- Tools
- Gates
- Fuel Storage
- Equipment
- Control Boxes

Famous Master Laminated Padlocks

Multiple steel plates . . . stronger than a solid block! Genuine brass-cylinder, pin-tumbler security. No finer padlock protection.

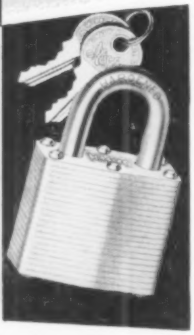


Stainless Steel Combination Padlocks

Double-wall construction . . . 3 number brass locking mechanism. Available with "Key-Control" — one control key opens all locks.

Special Long or Short Shackles

For switch boxes, chains, truck or freight car doors, and other uses where special shackle lengths are more desirable.



Speedy Service on Keyed-Alike and Master-Keyed Sets

Master's Service Department is geared for fast delivery . . . in emergencies, special orders are on the way within hours!

Write for FREE catalog

Master Padlocks
EVERY ONE AN OUTSTANDING VALUE

Master Lock Company, Milwaukee 45, Wis.
World's Largest Padlock Manufacturers

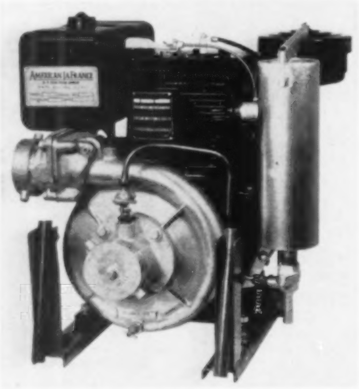
Purchasing

(Continued from page 273)

ward, and in reverse back-grades.

With special attachments, as shown in the photo on page 273, it is ideal to spread slurry seal, a dressing for sound but cracked streets and roads. For additional information, write HESTER PLOW CO., 1721 EGNER ST., (P. O. Box 3655) JACKSONVILLE 6, FLA., or use the Post Card on Page 56. Circle No. 939.

Portable Fire Pump



American LaFrance announces a new Model DC volume-pressure water pump, to be used alone or as a relay and to serve also as an auxiliary pump for flooded cellars.

The 130-pound unit is rated up to 250 gpm at 15 psi, and is powered by a 9-hp Briggs & Stratton 4-cycle engine. Its exhaust primer can operate in a few seconds. Model DC has standard 2½-inch discharge, and 2½-inch suction with cap and screen.

For details, write AMERICAN LAFRANCE, ELMIRA, N. Y., or use the Post Card on Page 56. Circle No. 981.

Traffic Line Marker

The Master 10, a highly maneuverable, self-propelled, one-man operated striping machine, is now offered by M-B Corp.

Designed for laying center lines on city streets, county roads and on state highways, it lays one, two, or three lines 3 to 6 inches wide, in one or two colors. But its key feature is its 50-inch overall width: traffic is not blocked in either lane and in heavy traffic and congested areas it can maneuver easily.

The Master 10 carries two 60-gallon paint tanks or one 120-gallon tank. An M-B bead dispenser with 360 pounds capacity bead tank is

GRIMCO Signs

We Can Supply
5, 50, or 5,000 Embossed Aluminum or Steel Signs, posts, new 1-pc. aluminum bracket.

OVER 200 U. S. STANDARD TRAFFIC SIGNS CARRIED IN STOCK FOR PROMPT SHIPMENT

new - **HAND SIGNS**

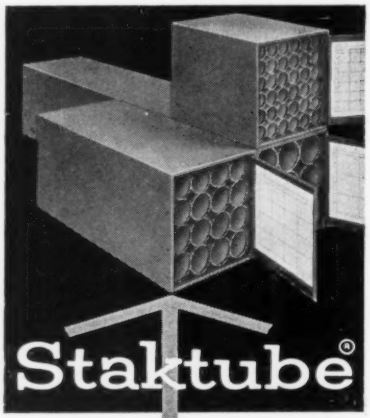
SLOW STOP

ONLY $4.50 EA.

Here's a new 18" two-sided Lightweight Aluminum hand sign for schools, rail crossings, construction crews, utilities, industrial plants, etc.

WRITE FOR A QUOTE OR A CATALOG

GRIMM STAMP & BADGE CO.
8105 Rosalie • St. Louis 17, Mo.



Staktube®

Stacor's lifetime steel ROLL FILE SYSTEM

"Easy-file easy-find" system to keep rolled prints, plans, maps clean, safe. 32 sizes—8 lengths, 4 tube diameters.

Send NOW for illustrated catalog

STACOR EQUIPMENT CO.
329 Emmet St., Newark, N. J.
Phone: BIgelow 2-6600

Automotive-type steering on the two front wheels of the Master 10 enables precision marking for new stripes and exact retracing of old lines.

available for reflectorized stripes.

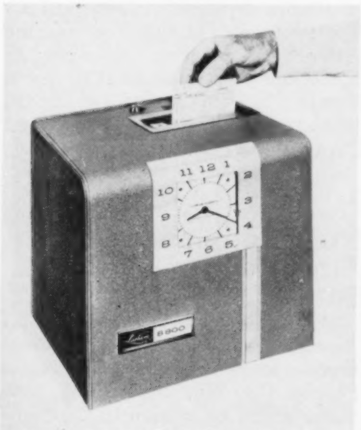
For complete information on this versatile unit, write M-B CORP., NEW HOLSTEIN, WIS., or use the Post Card on Page 56. Circle No. 940.

Automatic Time Clock

The 8800 Series is the designation for a new line of automatic time recorders, which automatically registers time on a time card when the card is inserted in the machine. Registrations are automatically positioned in columns on the card, eliminating double registration in the same space.

The recorder can be furnished with either a manual or an automatic two-column shift. This has the advantage of enabling a shorter time card to be used. It also permits payrolls of two-weekly or semi-monthly lengths to be kept on a single side of the card.

The 8800 Series will handle any type and length of pay period as well as irregular work shifts. For additional information, write LATHEM TIME RECORDER CO., 76 THIRD ST. N. W., ATLANTA 8, GA., or use the Post Card on Page 56. Circle No. 974.



Lathem's 8800 Series time recorder.

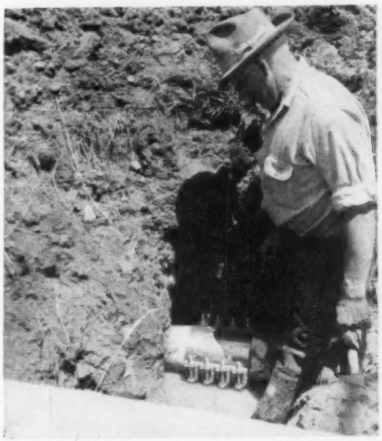
Speeds Up Photocopying

A new portable recording camera makes sharp, clear photographic copies of documents at extremely high speeds. It is called Copy-Cart, and according to the manufacturer, Peerless Photo Products, Inc., it can copy about 1,200 check-size business documents in one hour at a cost of 1½ cents each, or 450 letter-size originals per hour at a cost of 4½ cents a copy.

Photocopies are made on a continuous roll of photo-sensitized paper. Developed and dried inside the unit in a matter of seconds, photocopies may be either wound on a roll or automatically cut to desired

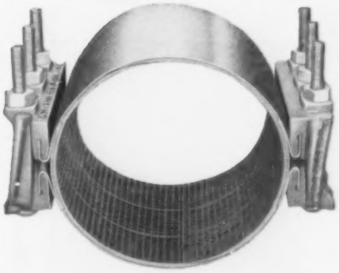
(Continued on page 276)

Where You Need a REAL Clamp-



Smith-Blair Type 221-10-inch wide-Full Circle Clamp Coupling used to repair a ⅔ circumferential break in a 6-inch line.

INSTALL
SMITH-BLAIR
FULL-CIRCLE
CLAMP COUPLINGS



- **They are more quickly and easily installed.**
- **The gridded gasket with recessed armor holds more pressure under all conditions.**
- **Each Smith-Blair Full Circle Clamp Coupling ACTUALLY fits a larger range of pipe sizes (proved by test and use) with a wider margin of safety.**

The above installation is typical of repairs in a large water system where lines are under 80-to 140 psi and located in the San Andreas fault area. Conditions like these dictate a REAL Clamp—a proved, dependable Smith-Blair Full-Circle Clamp Coupling.

The new Smith-Blair Full-Circle Clamp Coupling with the "Easy-In" bolting feature; self-positioning and self-aligning malleable iron lugs are carefully designed to make installation simple and easy under all conditions. It gives an even band pull—a permanent, economical installation. Saves repair cost because the same job never has to be done twice. Why not get the full particulars on a REAL Clamp—the Smith-Blair Full Circle Clamp Coupling—by contacting any Smith-Blair office or Smith-Blair pipe fitting supplier TODAY?

NEW NET PRICE BOOK

The New Smith-Blair Net Price Book gives you a quick source of information on approximately fifty different products for fitting the outside diameter of pipe—also gives you a handy reference for all common pipe O.D. on the back cover. Your copy can be obtained promptly—without obligation—by writing any Smith-Blair Sales Office or Smith-Blair Jobber.

MAIN OFFICE & FACTORY:
535 Railroad Ave.,
South San Francisco, Calif.
Jobbers in Principal Cities

SMITH BLAIR INC.

BRANCH OFFICES & WAREHOUSES:
South Gate, Calif., 5635 E. Imperial Hwy.
Greensburg, Pa., P.O. Box 647
Henderson, Texas, 711 W. Main St.

See us at the A.W.W.A. Convention, Bal Harbour, Florida, May 15-20

The trim desk-high Copy-Cart cabinet.

(Continued from page 275)

length and piled in correct order.

Copy-Cart photographs papers up to 8½ inches wide and of nearly any length. It can reduce documents to 70% of their original size. And it can reproduce all or part of a multipage document without the document being taken apart.

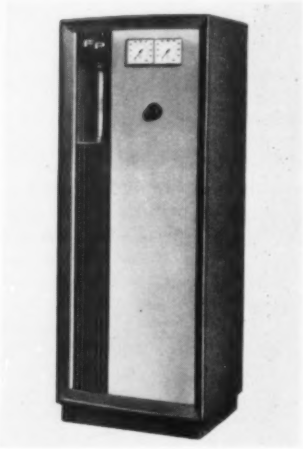
The camera may be set to produce copies of only one length. It also adjusts to copy a series of documents of different lengths. The interval between photocopies can be varied.

For further information about Copy-Cart, write the distributor, CHARLES BRUNING COMPANY, INC., MOUNT PROSPECT, ILL., or use the Post Card on Page 56. Circle No. 961.

Introduces New Chlorinator Line

Fischer & Porter Co. announce a new chlorinator line—the Series 3400— featuring a stack regulator, formerly used in other F & P models to provide additional accuracy, safety, and flexibility.

One basic model of the new line provides manual or automatic control over capacity ranges from .01 to 2000 pounds per day. For protection against corrosion the new series units are housed in rigid, single-unit fiberglass cabinets. Piping and working parts are also made of plastics or corrosion-resistant alloys to insure immunity to chlorine action.

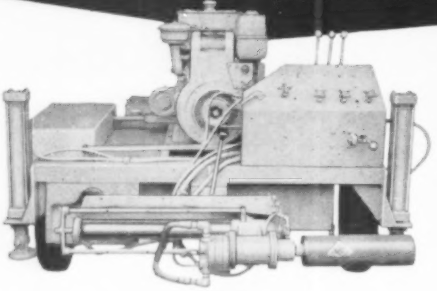


For full details, write FISCHER & PORTER CO., 467 JACKSONVILLE RD., WARMINSTER, PA., or use the Post Card on Page 56. Circle No. 946.

Polypropylene Broom Fiber for Street Sweepers

The latest in broom fibers for street sweepers is a polypropylene product known as Prostran. Hercules Powder Co., Wilmington, Del., producer of the resin used in the manufacture of these new bristles, has

specify **MOBILE**
hydraulic powered **DRILLS**
for *speed, power, economy...*



MOBILE DRILL

MARK V

It's the only diamond coring machine designed and built specifically for *production-type* concrete test coring on highways, aircraft runways and other slab-type masonry structures. Also available without custom-built trailer for mounting on ¾ ton utility truck.

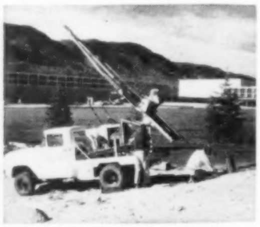
MOBILE DRILL

DIGGER

Production type earth auger bores holes for utility poles, guard rails and similar installations with lightning speed.

MOBILE DRILL **B-40 EXPLORER**

Lightweight B-40 core drills to 250′ and augers to 100′. It's a natural for diversified soils exploratory work and all-round utility.



MOBILE DRILL **MARK IV**

Diamond masonry drilling machine has exclusive *automatic hydraulic feed.* It's lightweight, portable, easy to use.

Mobile offers a complete line of hydraulic rotary drilling machines, soil sampling equipment, diamond masonry coring machines, diamond bits, drilling tools and equipment.

MOBILE DRILLING, Inc.
960 N. Pennsylvania Street • Dept. 10
Indianapolis 4, Indiana

on-the-job operating data that shows them able to perform all types of sweeping, from heavy to light, and to clean 2,000 to 3,000 gutter miles of street before requiring refill.

A polypropylene-filled broom is full and stiff, with an ample body and good appearance. It has a bend recovery rate which provides superior brushing action; because the broom is dense, it will pick up stone fragments and cobblestones. At the same time, it does an excellent job at fine sweeping.

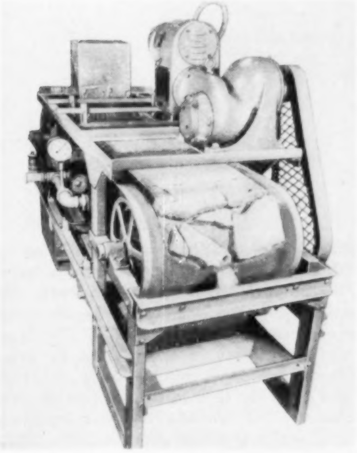
Operators can refill a broom core with Prostran using simple equipment. Literature on this new broom fiber can be obtained from E. B. & A. C. WHITING CO., BURLINGTON, VT., or by using the Post Card on Page 56. Circle No. 944.

Smaller-Sized Vacuum Filter Has Increased Capacity

A new horizontal, continuous vacuum filter uses an entirely new type of vacuum seal with no movable valves and a corrosion-resistant, sectionalized drainage belt which permits close separation of filtrates. It is called "Straight Line Filter," and features extremely high capacity, low operating and maintenance costs, and takes less head room and floor space than filters of equal capacity. The entire filtration cycle from feed to filter cake discharge is visible at all times.

Filter media, which is aligned at all times, may be washed on both sides continuously or intermittently; thus, blinding is eliminated. Filter cake is formed by a combination of vacuum and gravity drainage and is discharged by gravity. Counter current washing or leaching can be used.

Among the suggested uses for the new filter are in sewage treatment and filtering slurries. For complete information, write STRAIGHT LINE FILTERS INC., Box 291, WILMINGTON 99, DEL., or use the Post Card on Page 56. Circle No. 983.



Straight Line Filter discharging filter cake.

Snares Insect Pests

By utilizing the fact that night-flying insects are attracted by light in the ultra-violet and near ultra-violet bands, a new device sends insects to their doom.

It is called Night Hawk and consists of a special circular fluorescent ultra-violet light of great intensity, a housing enclosing a weather-proofed suction fan and motor, and

(Continued on page 278)

BUFFALO PIPE & FOUNDRY

BUFFALO MUNICIPAL CASTINGS

are available in every size and style!

No matter what size, shape or style municipal casting you may desire—you're practically sure to find a "Buffalo" casting to serve your needs. Or, where desired, castings may be made to your own specifications. Whether you need valve, service or roadway boxes, meter boxes, manhole rings and covers or other municipal castings, you'll find all "Buffalo" castings designed for service and dependability.

2 pc. sliding type adj. 5¼" valve box

2½" water or gas ext. service box

3 pc. screw type 5¼" valve box

Prompt quotations given on all your standard or special gray iron or non-ferrous castings.

Write or wire Dept. J for Bulletin M11.

SINCE 1930
BUFFALO PIPE & FOUNDRY CORP.

BOX 55—STATION B DE 6764 BUFFALO 7, N. Y.

DEMCOR E-X-P-A-N-D-E-D METAL

LITTER BASKETS

Help keep your city CLEAN

★ Durable ★ Rigid ★ Weather Proof
★ Low-cost ★ Galvanized ★ Built to last

Write for complete description and prices

DESIGNERS METAL DIVISION
North American Cement Corporation
650 Hoffman Street · Hammond, Indiana
Bus Stops
Alleyways
Along the Highway
Public Parks

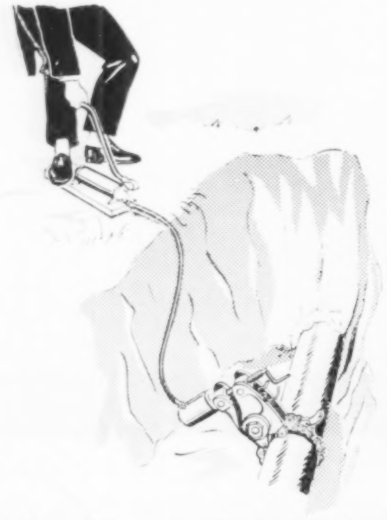
WANT TO CUT PIPE IN YOUR BEST SUIT?

We're kidding of course since you do have to dig the ditch.

The point is—with the Wheeler Heavy-Duty Hydraulic the separate pump offers the safety and convenience features of remote operation PLUS a clean cut in just seconds after the unit is installed. All you need is space to wrap the chain around the pipe.

Cutting Capacity

Class 150 AWWA Water Main
4" thru 18"
Class 250 AWWA Water Main
4" thru 12"
Cement Lined C I Water Main
4" thru 12"
Std. or XH Soil Pipe
4" thru 15"
Terra Cotta or Tile
6" thru 36"
Asbestos Cement Pressure Pipe
4" thru 12"


Cuts over 12" require optional extra chain.

NOTE: Used in conjunction with the Wheeler Hydraulic Auxiliary, the Heavy-Duty Hydraulic will cut Class 250 AWWA Water Main through 18".

The Wheeler Manufacturing Corporation
P. O. Box 688 Ashtabula, Ohio

THE NIGHT HAWK

Electrically-operated Night Hawk attracts and kills flying insects at night.

(Continued from page 277)

a mesh bag to hold the insects. The special light attracts the insects. When they get near, the powerful suction takes over—they're bagged!

The manufacturer reports that the average Night Hawk costs less than one dollar a month to operate and can be used in any weather. And although it lures night-flying insects, pulls them in and kills them, it does not catch bees and other beneficial day-flying insects.

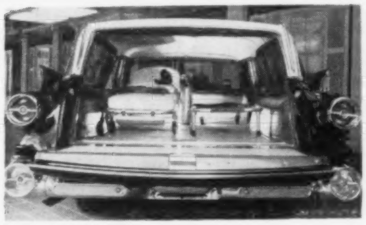
For additional information, and to learn of municipal applications, write McDonough Power Equipment, Inc., McDonough, Ga., or use the Post Card on Page 56. Circle No. 979.

New Sewerking

O'BRIEN SEWERKING 700
MODEL 700

Capable of rodding sewer lines up to 700 feet in length, the new Model 700 Sewerking is said to possess the power of the largest sewer cleaning machines (up to a distance of 700 feet) and to be less costly. It can be used for a preventive maintenance program and also for threading for bucket machines. For details on this compact unit, write O'BRIEN MFG. CORP., 5632 NORTHWEST HIGHWAY, CHICAGO 46, ILL., or use the Post Card on Page 56. Circle No. 982.

From Station Wagon to Ambulance



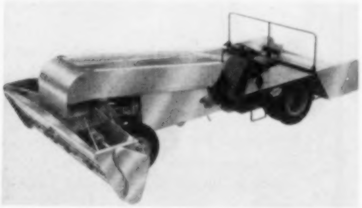
This 1960 Dodge station wagon is equipped as an ambulance for use by fire and police forces and hospitals. Because no major body changes are necessary, conversion can be done for as little as 200 dollars, or as much as $1,200, depending upon the amount of special equipment needed to meet specific needs.

Equipment for these vehicles, available through Dodge dealers, includes oxygen units, cots and stretchers, removable owner's name plates, removable ambulance window inserts, warning flashers, sirens, fire extinguishers.

As ambulances, the Dodge and Dodge Dart station wagons accommodate two cots and have plenty of head room.

For additional information, write Dodge Division, Chrysler Motors, Box 1259, Detroit, Mich., or use the Post Card on Page 56. Circle No. **941.**

Chip Spreader for Seal Coat Work



The new HI-WAY "SP" self-propelled chip spreader for seal coat work has been in development for two years.

Its central control tower permits the operator to direct the power plant conveyor, feed roll, feed augers, feedgate and hitch from a single, readily accessible operator's station.

Material flow is synchronized to actual ground speed of the "SP". A high-capacity, 36-inch wide, mining-type conveyor belt delivers material from rear to front hopper.

The rear hopper (3.5 cubic yards struck) has an adjustable feedgate to maintain the required amount of material in the front hopper. Spreading from the front hopper is done by a 13-foot symmetrical feed roll. An agitator operating simultaneously with the feed roll insures an even, well-distributed surface coat, eliminating caking or segregation of materials.

The "SP" is equipped with a high horsepower (88 continuous bhp) gasoline, fully sealed, engine, with a 2.2:1 torque converter amplification, and with an automotive transmission that has 5 speeds forward and 1 in reverse.

Independent main frame, said to be the first such design in a self-propelled chip spreader, will carry heavier loads and have greater resistance to torsional strains and stresses. Additional information can

(Continued on page 280)

SYMBOLIC LOGIC

$AEIOU \neq (AWW = Z)$

Take the phrase

"AMERICAN WELL WORKS OR EQUAL—"

Let AWW *stand for American Well Works*

Let Z *stand for all things equal to* AWW

Let the entire set of "vocal vowels"
stand for what's not equal to AWW

Now, AWW *has the following attributes:*

- Experience rating of 92 years.
- Its sole business is engineering, design and manufacturing of equipment for sewage treatment, water purification, mixing and pumping. It has no outside activities.
- It owns extensive plant, equipment and manufacturing facilities all on one site to assure complete quality control.
- All of its products are unconditionally guaranteed as to function and performance.
- Its products are reasonably priced to enable owners and engineers to stay within estimates.
- It offers latest proved methods and designs.
- It has the highest available mercantile credit rating.
- It has the largest list of satisfied users in the United States.

THE PROBLEM:

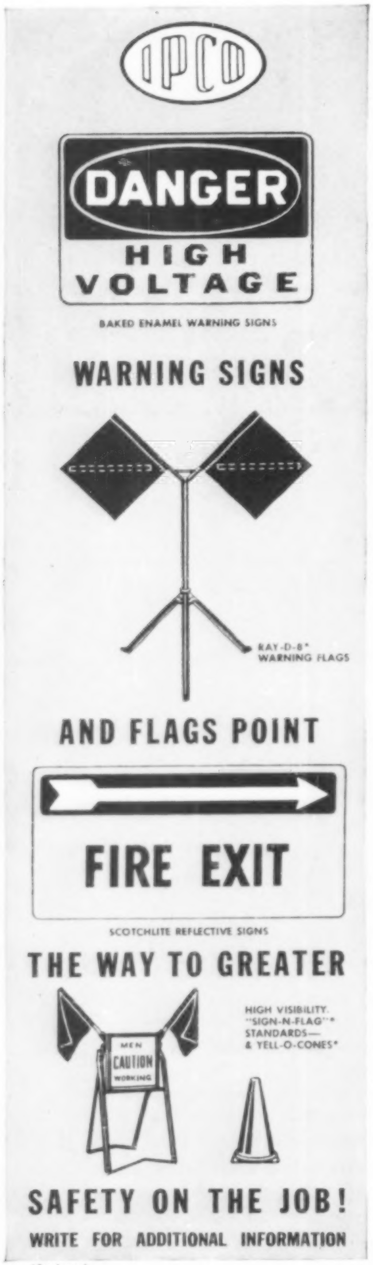
Ignoring the entire set of "vocal vowels"
(which are admittedly not equal to AWW*)*
solve for Z *(what's equal to* AWW*)*

HINT FROM AWW *ENGINEERING DEPARTMENT:*

Even if Z *could easily be determined,*

Take AWW *for assured advantages*

AMERICAN WELL WORKS AURORA, ILLINOIS


IPCO
DANGER
HIGH VOLTAGE
BAKED ENAMEL WARNING SIGNS
WARNING SIGNS
RAY-D-8* WARNING FLAGS
AND FLAGS POINT
FIRE EXIT
SCOTCHLITE REFLECTIVE SIGNS
THE WAY TO GREATER
HIGH VISIBILITY "SIGN-N-FLAG"* STANDARDS— & YELL-O-CONES*
MEN CAUTION WORKING
SAFETY ON THE JOB!
WRITE FOR ADDITIONAL INFORMATION

*Trademark

High visibility Scotchlite reflective signs available on pressure-sensitive sheet or mounted on aluminum! Standard warning signs for all plant entry, area or "in plant" purposes. New IPCO Ray-D-8 utility flags assure extra visibility, extra protection—day or night. IPCO signs, flags, cones and plastic barrier rope give you the most for your safety dollar. Depend on IPCO for all your safety needs . . . write for more complete information and prices today.

IPCO Reg. U.S. Pat. Off. 9-914R

SAFETY PRODUCTS

INDUSTRIAL PRODUCTS COMPANY

2968 N. Fourth Street • Phila. 33, Pa.

Purchasing

(Continued from page 279)

be obtained by writing to HIGHWAY EQUIPMENT CO., DEPT. H1-9, 616 "D" AVE. N. W., CEDAR RAPIDS, IA., or by using the Post Card on Page 56. Circle No. 980.

Dredge Package for Marinas

An inexpensive dredge package for use in marinas, shorefronts, rivers, channels, or any area where removal of mud, silt, sand and gravel is a problem, is announced by Morris Machine Works.

The complete package consists of: gasoline, diesel or electric power unit; Morris CK pump; V-belt drive; exhaust primer (gas or diesel); pump fittings; fuel tank (gas or diesel); gauges; gland water pump and drive; complete unit mounted on structural steel sub-base.

The unit is available in 6, 8, or 10-inch pump sizes, with power units supplied according to application. For additional information on this small suction dredge, write MORRIS MACHINE WORKS, DREDGE DEPT., BALDWINSVILLE, N. Y., or use the Post Card on Page 56. Circle No. 956.

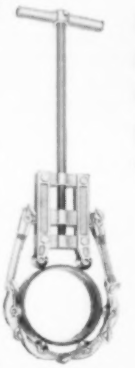
Prefabricated Marina Shelters

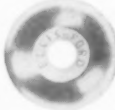
Minimum weight, maximum head room and low silhouette that offers minimum wind resistance are features of Standard Steel's new marina shelters designed to give maximum protection from sun, wind and rain.

Special light-weight steel arches at 3-foot intervals support up to 30-foot widths between uprights. All exposed surfaces are aluminum. Tops of arches are U-shaped to carry off rain water to the side supporting beams, which also serve as gutters. Because they are built for rapid assembly in the field, fasten-

Champion Fire Apparatus
W. S. DARLEY & CO.
CHICAGO 12

Ellis Heavy Duty Pipe Cutters For Pipe Up To 16" Dia.





With Long Lasting Cutter Wheels

Designed for water works men who appreciate the rugged construction of drop-forged frame and links; and a tool that assures no pipe breakage, no re-cutting and no spoilage.

THREE SIZES

No. 01 for 4" to 8" Pipe
No. 1 for 4" to 12" Pipe
No. 1B for 4" to 16" Pipe

write today for free literature

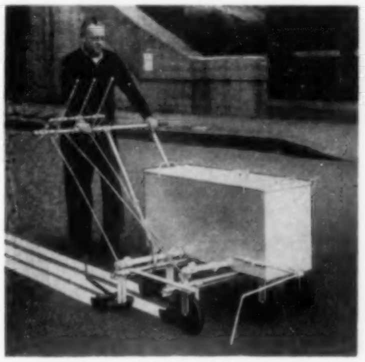
ELLIS & FORD MFG. CO.
1100 COOLIDGE RD.
BIRMINGHAM, MICH.

ing of the deep-ribbed aluminum sheets is done by means of special clamping strips—no nails, no drilling, no leakage.

The shelters are easily bolted to Standard Steel marinas. They are available in any length required (in 3-foot increments) and in spans of 19, 23, 27 and 30-foot widths—to accommodate varied slip lengths and widths. The shelters are available in attractive color combinations.

For specific information, write Standard Steel Products Mfg. Co., 2836 S. 16th St., Milwaukee, Wis., or use the Post Card on Page 56. Circle No. 978.

Simplifies Traffic Line Marking



This 3-shoe unit does any type of multiple striping job. It can put down three stripes simultaneously: 2 yellow and 1 white; 2 white and 1 yellow; all three yellow, or all 3 white. Hangars as well as shoe hooks are arranged so that adjustments to meet individual requirements can be done easily. Shoes from 2″ to 6″ can be applied.

Operation is uncomplicated: trip the shoe handles; turn on the enamel valves; start walking. Levers are on the handle to raise and lower the shoes. The enamel handle rods control the striping enamel.

The #360 unit, shown in the accompanying photo, has two tanks for enamel, one 20-gallon and one 10-gallon. There are also two soaker tanks to clean the shoes in #458 solvent. The #360 will do a creditable job of striping at approximately 2 miles per hour. It rolls easily and is mounted on 8″ rubber-tired roller bearing casters. For additional information, write the FencPainteR Division, 4911 S. Racine Ave., Chicago 9, Ill., or use the Post Card on Page 56. Circle No. 977.

Polysulfide Traffic Buttons

A new lane-marking traffic button that stays put on highways and streets is highly visible at night and is made of polysulfide base compounds and reflective glass beads.

Developed by the State of California's Highway Materials and Research Department, these markers have been under in-service tests since 1954. The raised, reflective button surfaces offer improved visibility at night and do not blank out in rainy weather, according to the Porce-Line Co., which manufactures these buttons from "Thio-Line", a compound made by Thiokol Chemical Corp.

Thiokol reports that traffic but-

(Continued on page 282)

CALMET
FORT WORTH TEXAS, U.S.A.
U.S. GALLONS
0 1 4 2 4 0
GAL'S
CALMET METER DIVISION, WORTHINGTON CORPORATION
CALMET METER DIV. WORTHINGTON CORP. FORT WORTH TEXAS

TIME AGAIN...

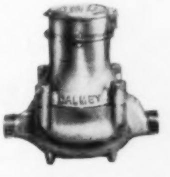
A lot of water's gone over the dam . . . and through hundreds of thousands of Calmet Meters (many of them *yours*, we hope!).

Now it's time to welcome you to the Annual AWWA Conference once again. Bal Harbour, Florida: May 15-20. See you then!

Time-tested, time-proven Calmet meters: the standard of excellence for more than thirty years.

CALMET METER DIVISION

WORTHINGTON 2301 SO. MAIN • FORT WORTH, TEXAS



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★ **durability**
★ **economy**
★ **flexibility**

- DAMS
- RESERVOIRS
- TUNNELS
- GRAIN ELEVATORS
- BREAKWATERS
- CONCRETE TANKS
- FILTER PLANTS
- STADIUMS
- SEA WALLS
- PIPE LINES
- SEWERS
- STACKS
- BRIDGES

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Contracts Taken Anywhere
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Gentlemen: Please have a representative contact me. I am interested in:
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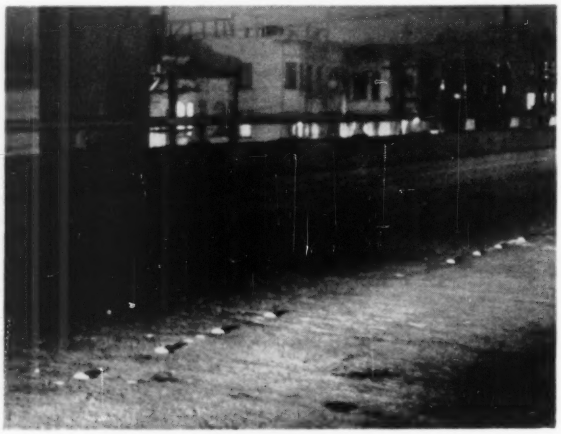
STREET ....
CITY .... STATE ....

Purchasing News



Placed in groups of four to mark lanes on this elevated highway, Thio-Line traffic buttons are visible at night.

(Continued from page 281)

tons made from polysulfide base compounds demonstrate a life expectancy of 10 to 15 years as busy crosswalk markers and as city street lane markers where traffic paint will last from two to six months and plastic strips from two to three years. On the open highway, the cast buttons will provide up to 25 years service while paint would last from eight to twelve months and plastic strips from two to three years.

The markers are 4 inches in diameter and 3/8 inch high, and are available in white or colors. For complete information, write THIOKOL CHEMICAL CORP., 780 N. CLINTON AVE., TRENTON, N. J., or use the Post Card on Page 56. Circle No. 948.

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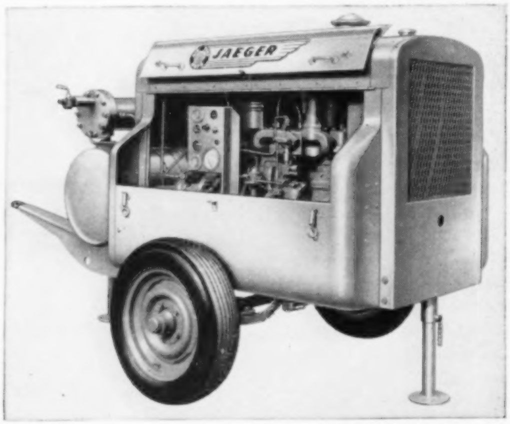
75 cfm operates a heavy breaker at top efficiency.



Easy starting, low in cost, and just right for an 80 lb. breaker . . .

JAEGER ROTARY "75"

Easy starting in coldest weather because it has no pistons to drag. Costs less than the reciprocating model it replaces, yet runs smoother, delivers much cooler air, has fewer parts. Fully equipped. Big tool boxes, automatic blow-down valve. Ask your Jaeger distributor or send for Catalog.

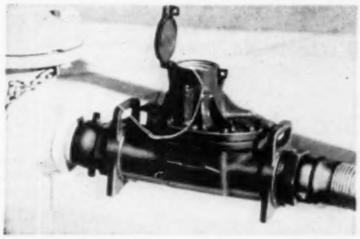
The Jaeger Machine Company, 505 Dublin Ave., Columbus 16, Ohio

75 • 85 • 125 • 250 • 365 • 600 • 900 CFM ROTARY COMPRESSORS

Compact Fire Hydrant Meter

Outstanding feature of this 23-pound fire hydrant meter is its straight-reading totalizer, which registers total flows from 30 gpm up without necessitating further computation. Accuracy is reported to be within 2%; pressure drop, less than one pound per square inch at 200 gpm. Propeller is polyethylene.

Municipalities and contractors will use it to help them form the most equitable basis of payment for water consumed during temporary deliveries from the hydrant — street cleaning, sewer flushing, construction, etc. Fire departments will use it for testing hoses.



Standard hose and hydrant couplings at both ends make meter connection possible in less than a minute. Twenty-four threads provide rigid support.

For complete details, write Hersey-Sparling Meter Co., 225 N. Temple City Blvd., El Monte, Calif., or use the Post Card on Page 56. Circle No. 942.

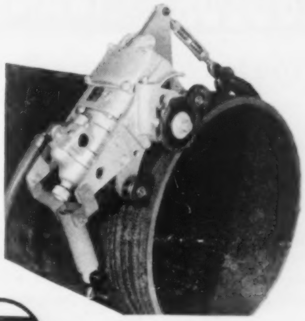
Colored Street Surfaces

Color-coated reflective street surfaces for guiding traffic flow at interchange ramps have been tested for driver reaction and studied under five separate conditions of illumination. The tests were conducted by the Minnesota Highway Department and Minnesota Mining and Manufacturing Co.

Driver comments gathered by the company's investigators reflected a recognition and appreciation of the new treatment, and concluded that the experimental guidance system is "highly accepted, easily followed and generally helpful."

This retro-reflective treatment includes a unified color-coded system

(Continued on page 284)



Fein

PORTABLE AUTOMATIC CAST IRON PIPE SAW

Capacity—6" to 60" Pipe
Weight—150# Saw, 50# linkage
Speed—1" Dia. per minute
Clearance—12" minimum
Set-up Time—5 to 10 minutes
Operates under water
Air Regulated motor
PRICE—Complete for 8" to 16" pipe with blade

ONLY $1,950.00

PRESCOTT TOOL CO., INC.
Worcester 6, Mass.

Rooms & Suites

. . . to please the most discerning at the BELMONT

Overlooking Lake Michigan and Belmont Yacht Harbor. 12 minutes from the loop—direct busses at the door. Spacious parking. New Banquet and Meeting rooms accommodate up to 400 persons. Charming, new Mansion House Dining Room and unique Cocktail Room—The Dam Site.

700 Rooms & Suites
TRANSIENT & PERMANENT
Full Hotel Services
Singles . . from $9
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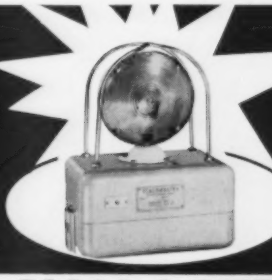
F. J. PETITMAIRE
General Manager

Belmont Hotel

BITTERSWEET 8-2100
3172 NORTH SHERIDAN ROAD
CHICAGO

ROAD BLOCK LIGHTS



CARPENTER FLASHMASTERS

SPECIALLY DESIGNED FOR TODAY'S HIGH-SPEEDS

Illustrated at top of ad is Type NXA-7 with huge 8" lens and transistorized circuit for new high in significant light output. Above, NXA-360 for 360° coverage.

SEND FOR COMPLETE SPECIFICATION SHEET

dealer and rental agency inquiries invited

ENTIRELY NEW DESIGNS

Built to give the most light for the least money . . . initially and over the years. Cuts bulb replacement, battery changes, and servicing down to new lows . . . brings warning impact and performance to new highs!

TWO COMPLETE LINES

Choose the best types for your specific needs . . . unique transistorized neon-lamp units for highest power or economy types to withstand rugged use and abuse. One-way, two-way, and 360° coverage types . . . automatic and radio controls available.

CARPENTER MFG. COMPANY
621 Bradley Street, Somerville 45, Mass. Telephone MOnument 6-4300

GOLDAK TRANSISTORIZED LOCATORS

Pipe Locator-Leak Detector

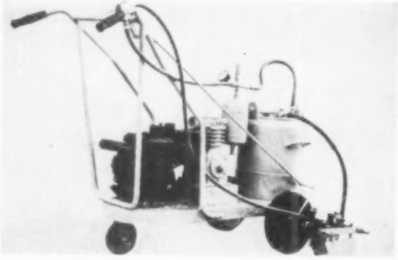
"Dualtronic"

Model LC-5T

The new "Dualtronic" combines the finest transistorized Pipe Locator ever developed with a high-gain Leak Detector to produce an effective and useful multi-purpose instrument. Designed specifically for Municipalities and Water Companies, the LC-5T assures pin-point detection of pipes, cables, mains and laterals and becomes a sensitive detector for water leaks simply by plugging in a crystal, rubber-encased microphone. Additionally, by a simple manipulation the new "Dualtronic" will pin-point valves, risers, boxes, and manhole covers. Now with transistors the versatile LC-5T is lighter, more sensitive, easier to operate, and it requires only flashlight batteries . . . Write today for further details on the "Dualtronic" and other Utility detection instruments.

The GOLDAK Company, Inc.
Leading Electronic Manufacturers
Since 1933
1544 W. Glenoaks Blvd.
Glendale 1, Calif.

WORLD'S FINEST DETECTION EQUIPMENT MANUFACTURERS SINCE 1933



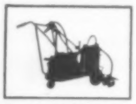
MODEL 401
Hand Propelled

Mark-Rite
LINE MARKER
PAINTS TRAFFIC GUIDE LINES BETTER . . .

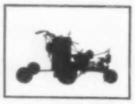
★ Marks clear traffic lines on highways quickly and economically
★ Easily marks cross-walks and safety zones.

This minimum priced marker offers advantages of larger and more costly striping machines. IT HAS SUCH FEATURES AS:—

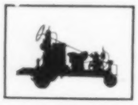
- 2 cylinder, single stage automotive compressor with 9.3 CMF displacement, air cooled.
- Adjustable pressure control safety valve, gauge, moisture drain trap and valve.
- 1 cylinder, 4 cycle, air cooled gas engine developing 3. H.P.
- Paint tank has quick loading cover with one eccentric bar locking device.
- Spray gun is air actuated.
- Spray shields are located in line with front axle which never leaves ground. Shields are at pivot point of machine.
- Machine forms air blast to clean surface prior to painting.
- Gun control located on right handle bar with finger tip action.


MODEL 301

★
MODEL 401


MODEL 8088

MODEL 8088B


MODEL 9000

FOR COMPLETE SPECIFICATIONS WRITE FOR THIS 16-PAGE CATALOG TODAY . . . Tells how to select the proper Line Marker for your Job.

Unimasco, inc.
UNIVERSAL MANUFACTURING & SALES CO.
424 West Redondo Beach Blvd., Gardena, Calif.
FAculty 1-3322

Purchasing

(Continued from page 283)

in which turnoffs and exit ramps are marked with blue: blue reflective signs, blue delineators and blue reflective coating of the pavement surface. On-ramps and points of merging traffic are defined by the standard color for caution: yellow delineators and yellow reflective treatment. Through-lane delineation is white with standard green background signs.

These new markings "borrow" nighttime illumination from the headlights of approaching cars; they are designed as an economical supplement to existing traffic guidance devices. For details, write MINNESOTA MINING AND MANUFACTURING Co., 900 BUSH AVE., ST. PAUL 6, 56. Circle No. 964.

Drop-In Waste Receptacle

The new Bennett Drop-In waste receptacle features a self-closing chrome-plated side door with spring action that makes depositing of refuse easy. A water-tight galvanized liner is equipped with convenient full-swing handle for easy emptying. Special messages can be stenciled on sides at nominal extra cost. For full details, write, BENNETT MFG. Co., ALDEN, N. Y., or use the Post Card on Page 56. Circle No. 969.

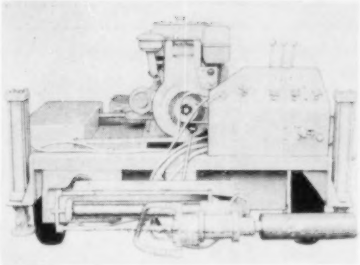
Drive In Comfort

Operators of heavy-duty trucks, tractors, earth-moving equipment and delivery vehicles will find the new, improved 1960 FLexible-Air Ride Seat permits them to work more comfortably, with less fatigue and less backstrain. For these seats assure the necessary support for hips, back and legs and can be adjusted readily by the driver to meet his individual requirements.

The entire seat assembly is supported on a soft cushion of compressed air contained in a special diaphragm and canister located below the seat. This absorbs pitching, swaying and shocks transmitted from the road before they reach the driver. The seat frame is constructed from heavy treated steel, back and seat cushions from one-piece crush-proof foam rubber slab. The entire seat may be transferred from cab to cab with ease.

For more detailed information, write FLEXIBLE-AIR SEAT CORP., 717 W. 11TH ST., LOS ANGELES 15, CALIF., or use the Post Card on Page 56. Circle No. 970.

Hydraulic-Powered Pavement Coring Machine



Mobile Drill Mark V is designed for production-type test coring on highways, aircraft runways and other slab-type masonry structures. It is lightweight, and may be quickly mounted on or demounted from any ¼-ton truck or trailer. Two-point hydraulic suspension reduces set-up time to seconds. The hydraulic drill motor accommodates diamond bits from 2″ to 10″ in diameter.

The self-contained, self-powered unit has 3-way hydraulic drive that permits coring through steel reinforced concrete at the rate of 30 seconds per inch, provides up to ⅓ longer diamond bit life and operating ease. Hydro-Cushion Control automatically maintains the correct drilling pressure and rate of feed and automatically compensates for minor changes in material hardness.

For complete specifications on the Mark V, write MOBILE DRILLING, INC., 960 PENNSYLVANIA ST., INDIANAPOLIS 4, IND., or use the Post Card on Page 56. Circle No. 947.

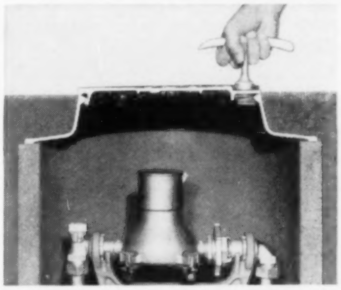
Outboard Engine Choke

To provide the correct degree of choking until the engine warms up, Evinrude Motors introduced an automatic choke on its Lark and Starflite outboard models for 1960. It operates as does the automatic choke on a car. It became practical with the introduction of thermostatic temperature control on Evinrude motors in 1958. The thermostats assure a constant engine temperature and warm the coolant in a cold engine to 140 degrees in about one minute's time.

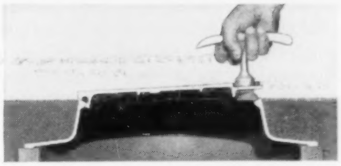
However, it may require several minutes to dissipate this heat to all parts of the engine. The auto-

(Continued on Page 286)

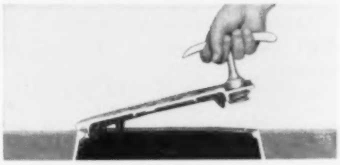
protection plus
WITH FORD METER BOX COVERS



The Ford Lifter Worm Lock protects both meter and pedestrian . . plus, acts as a "working" member of your meter reading and service departments.



Locking action pulls lid down tightly on cover.



Powerful screw-jack action lifts lid, breaks any ice or dirt crust.

Unlocking action automatically engages Lifter Key and key becomes handle.

Can be operated with any pentagon key of the same size.

FORD
FOR BETTER WATER SERVICES
THE FORD METER BOX COMPANY, INC. Wabash, Indiana

THE RECREATION LINE

WHEREVER
CHILDREN PLAY

Safely!

Recreation equipment with engineered safety to meet the most rigid requirements.

- Playground Equipment
- Indoor Basketball Backstops
- Swimming Pool Equipment

Literature for each line available on request—please specify.

DEALER INQUIRIES INVITED

RECREATION
EQUIPMENT CORP
Dept. AC-60 — 724 W. 8th St.
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Faster LOCATING!

LOWER SERVICE COSTS

with the improved AQUA VALVE BOX **LOCATOR!**

Your Name In Gold FREE!

$32.50 F.O.B. Cin., Ohio

STOCK this useful tool for every service CAR and CALL • Speed • Locating • Keep Customers Happy

- **NO WIRES, BATTERIES or SWITCHES**—simple, powerful magnetic action, factory adjusted to YOUR geographical location assures unfailing results!
- **NO NEEDLE SPINNING**—exclusive electric braking action saves you time!
- **NO STOOPING**—easy top-view reading!
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- **GUARANTEED**—to function regardless of weather, surface or ground cover!
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Purchasing

(Continued from page 285)

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For additional information, write EVINRUDE MOTORS, 4143 NORTH 27TH ST., MILWAUKEE 16, WIS., or use the Post Card on Page 56. Circle No. 958.

Purchasing News Briefs

• conversion is completed and production of extra-long cast iron pressure pipe is in full swing at the Council Bluffs, Ia., plant of **Griffin Pipe Division of Griffin Wheel Co.**, Chicago, Ill.

• the brief interruption of manufacturing operations over, **Ludlow Valve Manufacturing Co.**, Troy, N. Y., reports production and shipments "rolling satisfactorily."

• the new and larger quarters of **Camp, Dresser & McKee,** Consulting Engineers, are at 18 Tremont St., Boston 8, Mass.

• construction is underway at Hillsboro, Texas, on a new, up-to-date, multi-million dollar **Keasbey & Mattison Co.** plant for the manufacture of asbestos-cement pressure pipe, irrigation pipe and sewer pipe and other forms of pipe products for a rapidly expanding Southwest market.

• 1442 E. Outer Drive, Detroit 34, Mich. is the new address of **Robert H. Stellwagen,** Consulting Engineers.

• a month featuring used equipment values begins May 1 at **Caterpillar Tractor Co.** dealerships across the nation where machinery values will include bargains in all condition categories, from Bonded Buy to "as is".

• opening of a New England office at 1000 Farmington Ave., West Hartford 7, Conn., is announced by **Bowe, Albertson & Associates,** Engineers, New York, N. Y.

• a 50-year guarantee for L-M Permaline fibre pipe, announced by

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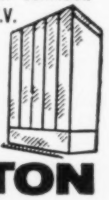

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Line Material Industries, Milwaukee 1, Wis., is to apply to all new Permaline house-to-street sewers that serve single and two-family dwellings.

• arrangements have been completed whereby Tanques de Acero Trinity, S. A., a Mexico City firm, will manufacture, assemble and distribute the complete line of truck-trailers and related equipment, in Mexico, for **Hobbs Trailers** of Fort Worth, Texas.

• new branch headquarters for the **Charles Bruning Co., Inc.,** Mount Prospect, Ill., manufacturer of diazotype copying machines and reproduction equipment, is 26th and Broadway, Kansas City, Mo.

• as of May 1, New York executive, sales and engineering offices of **Nichols Engineering & Research Corp.** will be located at 80 Pine St., New York 5.

• manufacturing operations in Brazil were formally begun on April 6 by **Huber-Warco Co.** of Marion, Ohio, at Mogi das Cruzes. The Brazilian plant is organized as Huber-Warco do Brazil, S. A., and is a wholly-owned H-W subsidiary.

• surviving partners of **Seelye, Stevenson, Value & Knecht,** Consulting Engineers, agree to continue firm under the same name. Senior partner Elwyn E. Seelye died December 28, 1959.

• the **Allis-Chalmers Mfg. Co.,** Milwaukee 1, Wis., combines its Industrial and General Products Divisions into a new operating unit called the Industrial Equipment Division, and names W. M. Wallace, a vice president and general manager, as head.

• new representative in the northern Texas and Oklahoma area for the **Pfaff & Kendall** line of aluminum standards for street, and highway and area lighting, is Dallas-based B. E. Watson & Associates.

• newly-named California representative for the Detectron line of utility instruments—pipe and pipe-leak detectors and valve and box detectors—is Overton Sales Equipment Co., 5981 Fairmont Extension, San Diego 20, Calif., reports **Computer-Measurements Co.,** Sylmar, Calif.

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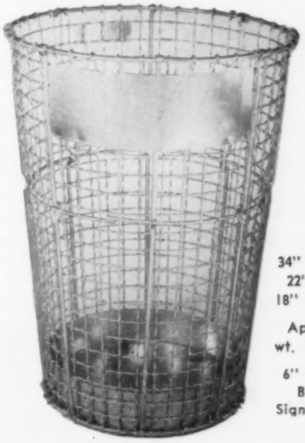

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About People

F. T. Quinn

J. M. Proos

John M. Proos, of Indianapolis, is the newly elected chairman of the board, and Frank T. Quinn, of Memphis, is the new president of **Layne & Bowler, Inc.,** of Memphis, Tenn., the "world's largest ground water developers" and manufacturers of Layne vertical turbine pumps. With this new advancement, Mr. Proos will remain in his capacity as vice president of Layne-Northern Co., Inc., which is an associate company of Layne & Bowler, Inc.

G. J. Landers has been named to the newly-created position of manager—marketing department of the Construction Equipment Division, **Blaw-Knox Co.,** according to word from D. F. Jurgensen, vice president and general manager of the division. Mr. Landers will headquarter at Mattoon, Ill., where division headquarters and production facilities are located.

Word has been received of the death, on April 4, of Thomas G. Smith, age 30, vice president and sales manager of **Gordon Smith & Co., Inc.,** Bowling Green, Ky., following a short illness.

D. G. Richman

K. O. Hodgson

New president of recently reorganized **Ludlow Valve Manufacturing Company, Inc.** of Troy, N. Y. is Daniel G. Richman, who is also president of Patterson Foundry Co., East Liverpool, Ohio, and the International Process Equipment Co., Dayton, Ohio. Associated with Dan Richman in the operation of Ludlow Valve are Sidney Dvorak, vice president and general administrative director; James Elder, vice president, manufacturing; Kenneth O. Hodgson, vice president and sales manager; Robert Warshaw, secretary.

George J. "Bud" Schlitt, Jr., former Chicago regional manager for **The Lufkin Rule Co.,** Saginaw, Mich., replaces Donald F. Oltz as West Central Division sales. Mr. Oltz has been promoted to assistant sales manager.

Harland P. Sisk is the new general manager of **General Electric's** Distribution Transformer Department, Pittsfield, Mass. Another G-E appointment is that of W. T. "Tex" Smiley as national service manager for the company's mobile radio at the Communication Products Department factory headquarters in Lynchburg, Va.

Executive promotions recently announced by Philadelphia-based **Aero Service Corp.** include those of Burtram McClain to vice president and general manager; Charles B. Ermentrout to treasurer; Eugene C. Cook to secretary, and Harry G. Franks to controller.

Thomas M. O'Malley, vice president in charge of marketing for the company, has been elected a member of the board of directors.

R. B. Everson

The 81st birthday of Roy Blair Everson, president of the **Everson Manufacturing Corp.,** Chicago pioneer firm in water treatment service since 1900, is to be well celebrated on July 12, 1960. Roy tells us he will be at his desk from 6 a.m. until late evening, as usual.

Stacy Standley, product manager-lighting of **Line Material Industries,** Milwaukee 1, Wis., announces the appointment of Dean W. Morrill as market manager—street, highway, and airport lighting.

As chief engineer of **Ward LaFrance Truck Corp.** of Elmira, N. Y., Ricardo H. Vergara will direct engineering activities for all company divisions.

S. L. Hanauer

The appointment of Sylvan L. Hanauer,, P. E., as consulting engineer to **Morse Boulger, Inc.** of New York City, is announced by John G. Hagan, Jr., president of the 70-year-old incinerator manufacturing firm. Mr. Hanauer has vast practical experience in coping with specialized waste disposal problems and the problem of air pollution control.

J. F. Sanders

John F. Sanders is now district manager of the North Kansas City office of the **Neptune Meter Co.,** New York, N. Y. He succeeds Ira T. Collar, Jr., retired. Neptune also named Dean L. McNiven as a sales representative to handle sales of water meters in thel State of Nebraska.

A. L. Laack

FWD Corporation, Clintonville, Wis., has named Arthur J. Laack to the newly created position of director of merchandising. He will continue as advertising director and, in addition, will coordinate, merchandise and implement all FWD product promotions.

H. G. Meadows

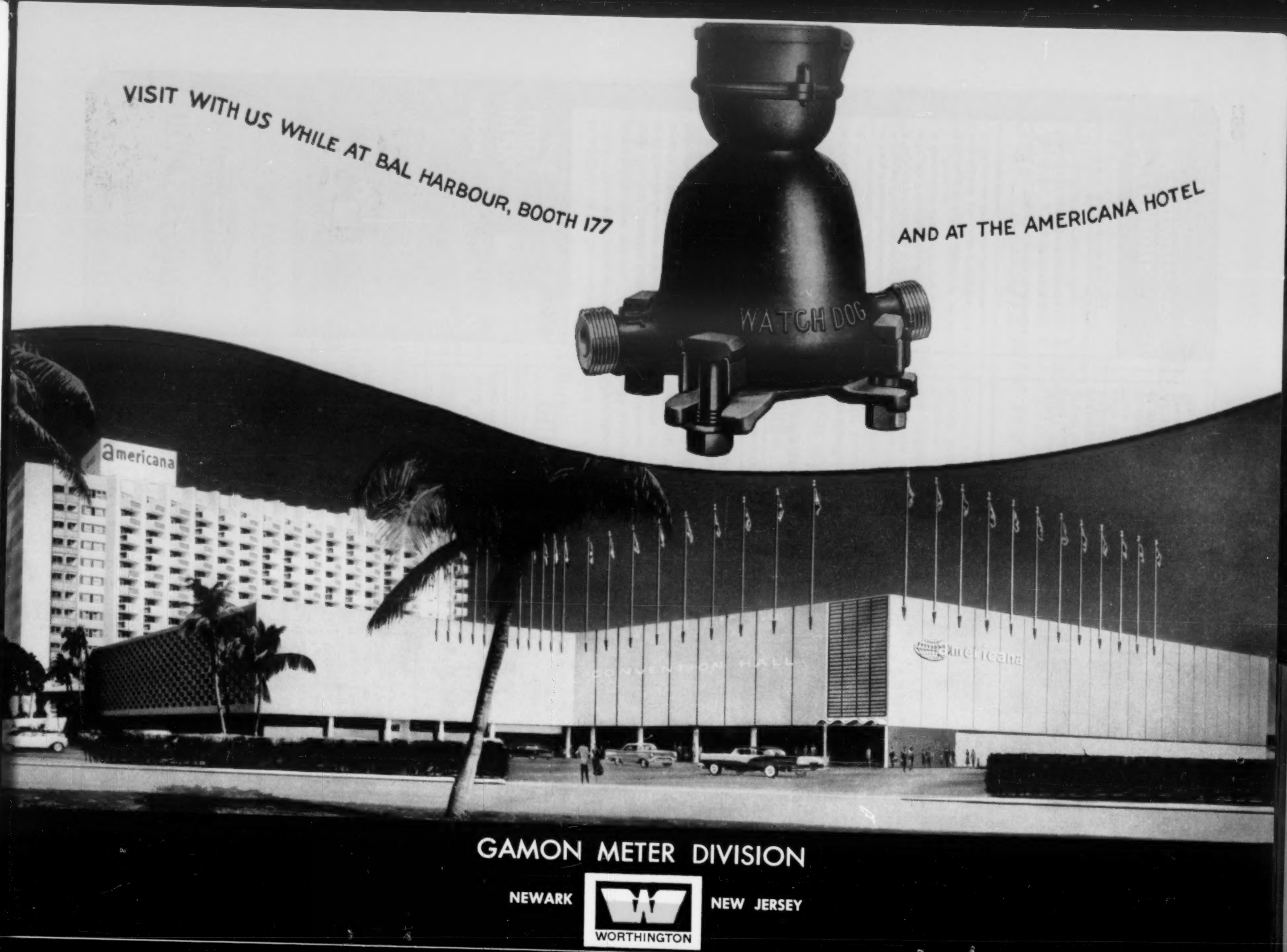
The association of premolded joint manufacturers, formerly known as Expansion Joint Institute and now officially the **Concrete Joint Institute,** elects as president Harry G. Meadows of W. R. Meadows, Inc., Elgin, Ill.; as vice president, James C. Whitney of Celotex Corp., Chicago; as treasurer, Wallace C. Fischer of Servicised Products Corp., Chicago. The office of the Institute is now located at 360 N. Michigan Ave., Chicago 1, Ill.

S. A. Norris

Spaulding A. Norris has been appointed to the newly-created post of vice president in charge of sales and elected to the board of directors of **Yeomans Brothers Company,** Melrose Park, Ill., manufacturers of pumping and waste treatment equipment. Mr. Norris joined the Yeomans organization in 1950, most recently serving as general sales manager.

William F. Kegley, Jr., sales repre-

(Continued on Page 290)



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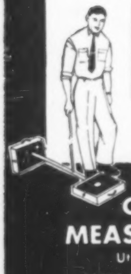

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About People

(Continued from Page 288)

sentative of **Kennedy Valve Mfg. Co.**, Elmira, N. Y., will cover North and South Carolina, according to James R. Erven, vice president in charge of sales.

The Ralph B. Carter Co., Hackensack, N. J., appoints Fritz F. Tentschert as sales manager of its Waste Treatment Equipment Division.

Lindsey Engineering Co., Minneapolis, Minn., appoints John R. Kemp to the position of civil engineer.

Malcolm Pirnie Engineers, New York 36, N. Y., admits Alfred C. Leonard, an associate, to partnership.

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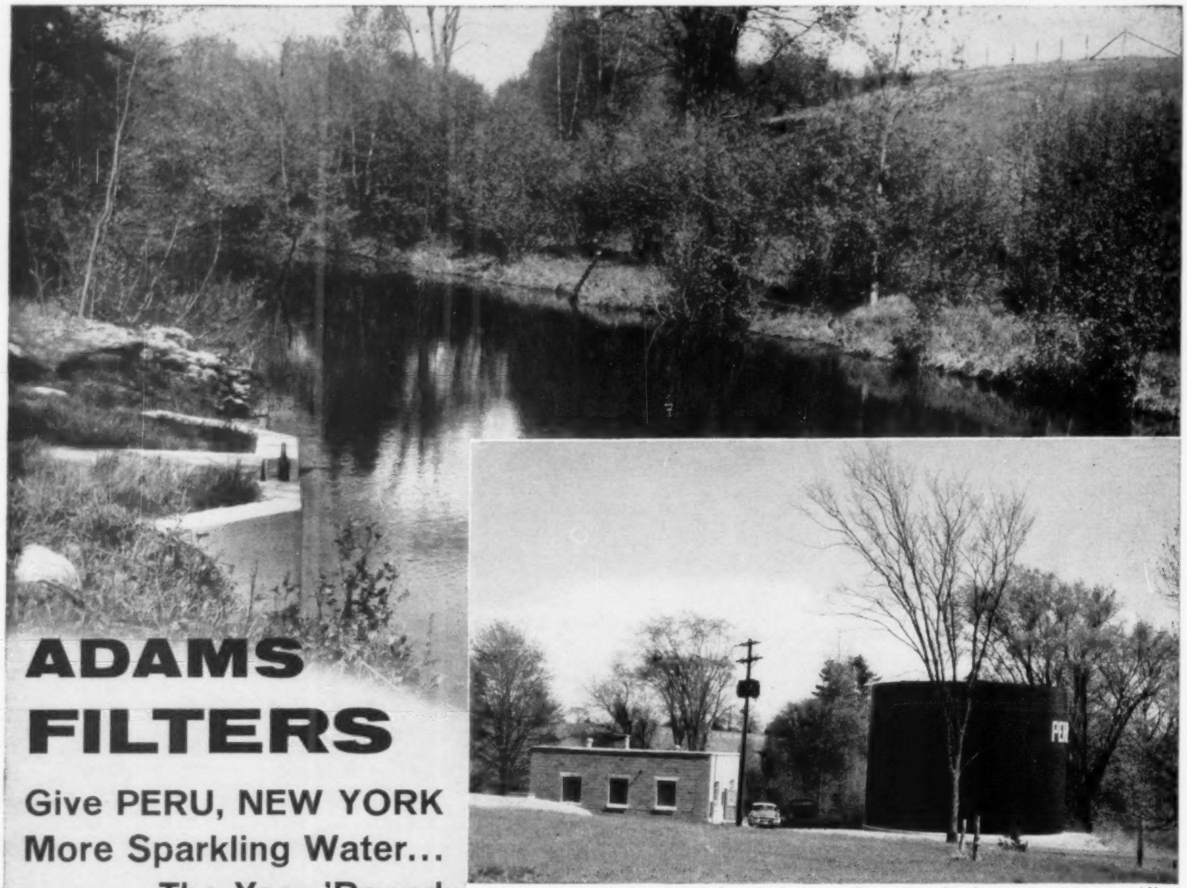
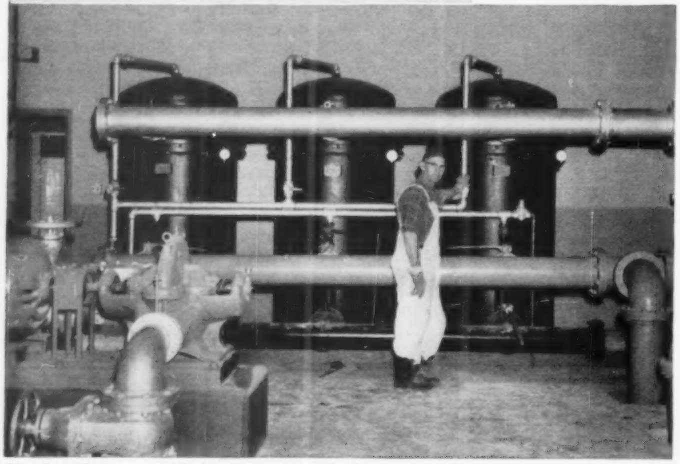


This concrete block structure houses the entire Peru, New York, water system, providing approximately 150,000 gpd, at an average daily flow of 225 gpm. The Little Ausable River intake weir is shown above.



Mr. Joseph Morrow, Water Department Superintendent, Town of Peru, New York, is quite pleased with the simplified operation of the three Adams #169 filters which handle the town's entire water supply. Mr. Morrell Vrooman, Jr., of Gloversville, N. Y. was the consulting engineer.

The Town of Peru, New York, located in northeast New York State, now boasts a year 'round water supply of unequalled clarity and brilliance. Since its new filter plant was completed in the Spring of 1959, the town has experienced a marked improvement in the quality of its water supply. Residents today are quite proud of their "clear mountain stream" water.

In the past, Peru normally obtained its water from a mountain reservoir which provided settling. During dry spells they pumped it from the Little Ausable River. Since screening and chlorination were the only steps taken to make it suitable for human consumption, the water was affected by storms, run-offs and in dry weather by the change of source. The decision was made to install a filtration plant of three Adams 169 diatomite filters.

The original concept of the new filter plant was to treat only water from the Little Ausable River. However, preliminary tests of the new plant were conducted using reservoir water. After filtration the clarity, odor and color of the water were so greatly improved that plans were made to filter all of the town's supply.

The system, using Adams filters, is conveniently housed in a simple block concrete structure. Because of its compact area, no elaborate foundations or other elaborate concrete work was required. The extended filter cycle has minimized maintenance and labor costs. The Adams diatomaceous earth filter design offers the ideal solution to small municipality filter problems.

Why not investigate how the Adams line might improve your or your client's water supply. Write today.

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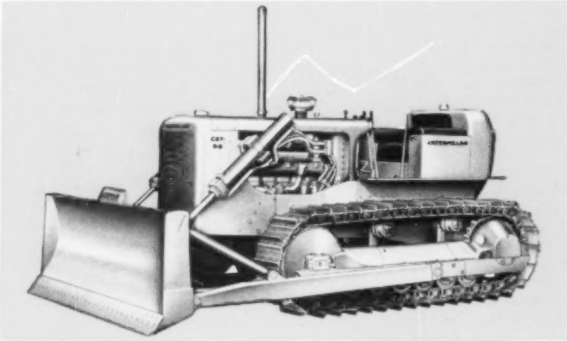

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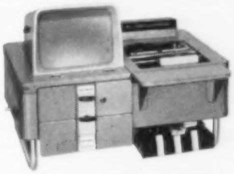

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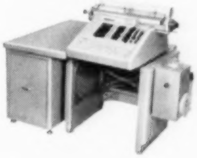

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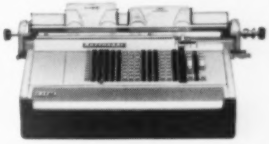

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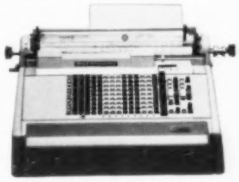

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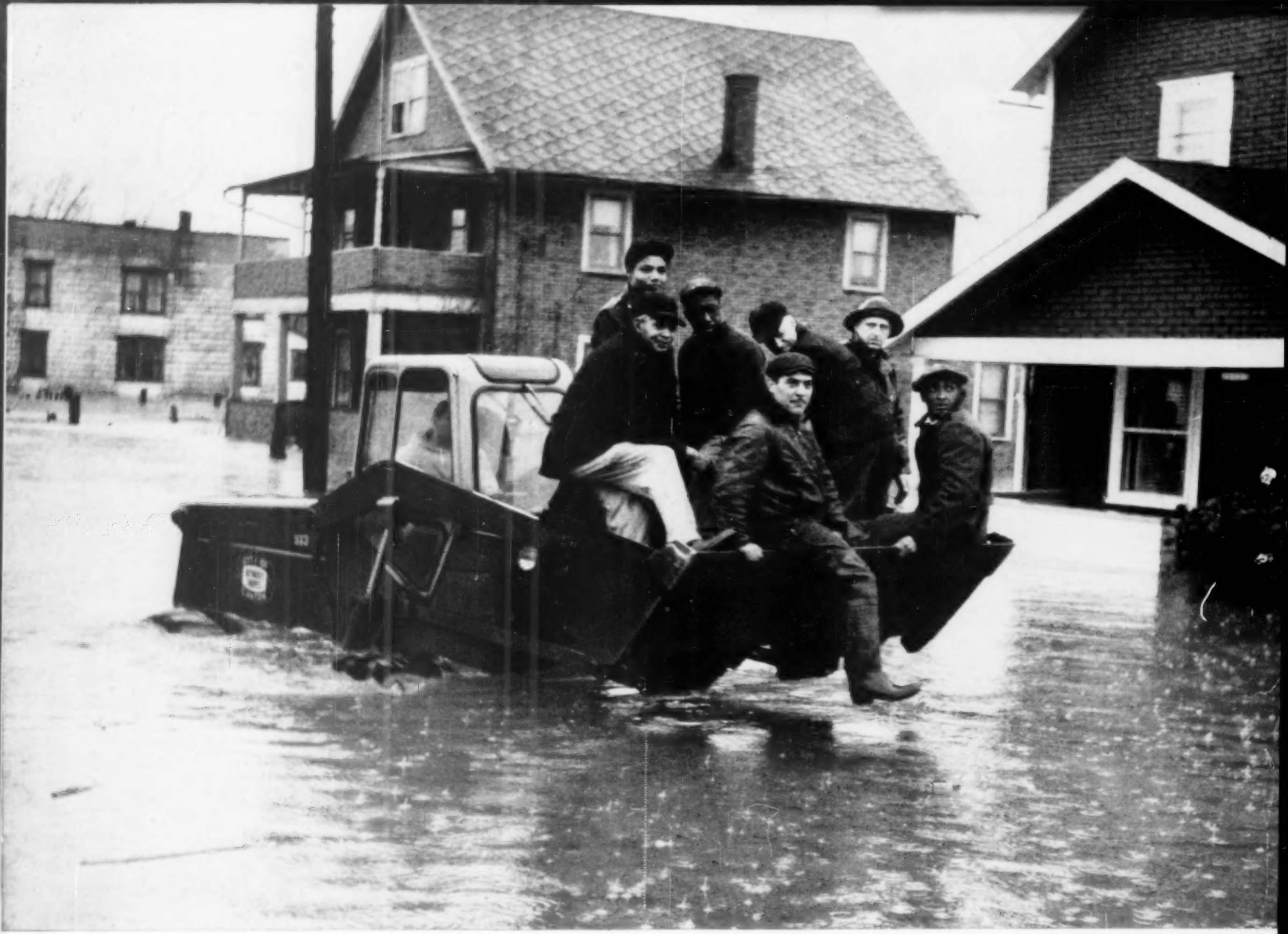

Flood rescue proves Michigan ability to operate in deep water

This picture was taken during one of the worst floods in the history of Canton, Ohio!

The machine shown is a *Tractor Shovel*—one of three city-owned Michigans that joined ordinary boats and rafts to speed rescue work.

Despite muck and silt and the 5 foot depth of the raging waters, the Michigans plowed along without pause, moving hundreds of people to higher ground. Their use, unplanned, nonetheless *proves Michigans can work successfully in deep water* no matter what the task—flood rescue, stream crossings, beach cleaning, etc, etc.

Switch from roadbuilding to diking to "ferry service"

It all started when heavy spring thaws released a torrent of water into Nimishillen Creek. The water rose—and rose—soon over-ran its banks, and poured out over a 25-block area of Canton's northeast side. Call went out to the three 1¼ and 1¾ yd Michigans. In they rushed from normal roadbuilding and material-handling chores, started building retaining walls. Soon, though, it became obvious the water was rising so rapidly dikes weren't nearly as important as saving people. Nobody thought *any vehicle* could get through, but the need was so great the Michigans were tried.

They did the job!

First, the very old and the very young, the crippled, the bed-ridden were scooped from danger and carried away in the machines' big (6′7″ and 7′1″ wide) buckets. When the infirm were safe, the Michigans ferried out load after load of healthy evacuees.

"These machines certainly saved the day for us," said Wilson J. Myers, Service Director for the City of Canton. "They plowed through the shoulder-high water like steel whales with a mouthful of Jonahs. They even put the boats to shame. The Michigans were faster and they didn't tip in the current."

In water several days, yet no repairs needed

Wilbur Schultz, Canton's vehicle maintenance superintendent, pointed out that Michigans worked round-the-clock at the flood scene with only an occasional rest—and that only for refueling.

"These rigs did a wonderful amphibious job for us and didn't require any major over-haul despite their prolonged bath," said Mr. Schultz. "They were nearly submerged for hours at a time; yet, after the flood threat ended, we only had to drain, clean out and recharge the oil in the differential housings."

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CLARK EQUIPMENT COMPANY

Construction Machinery Division

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